Railway Age

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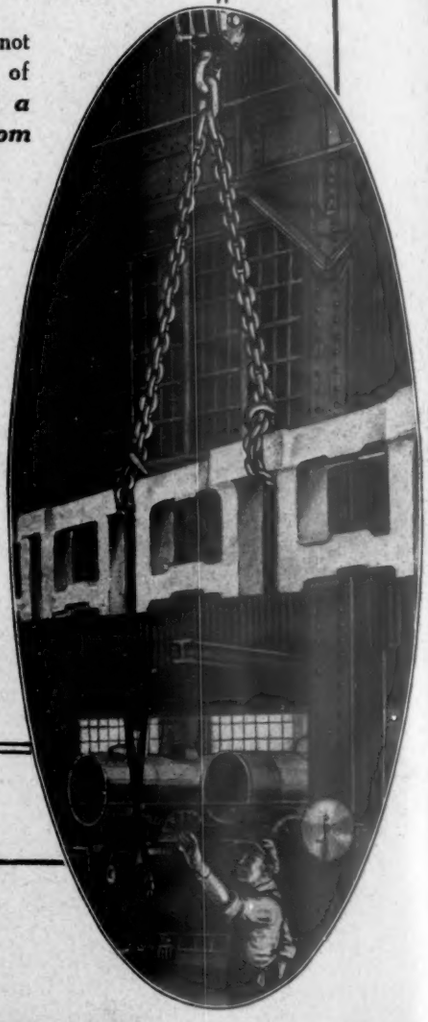

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EDITORIAL

Railway Age

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Special Cars for Special Service

At this time when the roads are naturally giving much consideration to the ordering of additional cars for the handling of revenue traffic, it is pertinent to consider whether the facilities may not also be amplified by substituting for many cars now employed in company or revenue service cars designed primarily for specific work and thereby more efficient and economical in the performance of such work. A survey of the number of cars used, temporarily or permanently, in company service on the average road will show that a large number are in constant use for such regular and continuous operations as the transportation of cinders and other refuse, ballast materials, coal for stations and water stations, etc. In some instances, equipment obsolete for revenue service is assigned to this work. In other cases, operating conditions may make advisable the use of revenue cars for the occasional transportation of company supplies. However, those few roads which have given this subject careful study have found that there are many places in which special service cars, such as dump cars, may be employed in a manner to reduce the drain on revenue equipment and at the same time promote economy of operation because of their special application to those services for which the cars are designed. The possible result that may be gained by the release of standard equipment in this manner from company service should be considered at the present time when determining on equipment needs.

Overtime a Necessity

While the average percentage of bad order freight cars on the railroads as a whole has shown little improvement for several months past the conditions on an appreciable portion of the roads appear to be well within normal limits. And, as a corollary to this statement, conditions on many railroads are far worse than the average. Therefore, no program for the improvement of the bad order situation can be laid down which is suitable in detail for general application. The measures taken must be adapted to local conditions. But if the average for the country is to be improved, extraordinary efforts must be put forth by those roads whose proportion of bad order cars is materially above the average. The need for overtime work on car repairs was never greater at any time during the Railroad Administration's control than it is at present. During the last half of 1918, when a special drive was made to improve car conditions the total number of bad order cars was reduced from 179,600 to 153,800 in a period of about nine weeks. This, of course, was accomplished by concentrating on light repairs and resulted in the number of cars requiring heavy repairs increasing from less than 50 per cent of the total number of bad order cars to about 59 per cent. The latest available figures indicate that there are between 175,000 and 180,000 cars in bad order at the present time of which 62 per cent, or approximately 110,000, are in need of heavy repairs. If an increase in this number is to be prevented and a reduction hoped for, a large number of repair points must resort to overtime. Much can also be accomplished by equalizing the accumulation of bad orders between repair points. This is not only necessary in order that full advantage be taken of all available facilities but it is desirable as a means of equalizing the burden of overtime.

Watch the Individual Car

In making a trip of inspection over his lines recently, the president of a large railroad chanced to notice a car standing at the end of the track which showed evidence of having been there for some time. On questioning the division officer he was informed that the car in question had been placed there only recently. Later investigations showed that it had been standing for ten days, although the purpose for which it was set could have been accomplished in a day. This incident is not cited to imply that the superintendent should have known how long this car or any other individual car had been standing at any one place on his division, but rather that he should have known that no serviceable car was standing at any point on his division longer than was necessary to accomplish the purpose for which it was placed. The problem of car movement is that of keeping *every* car moving. It involves close supervision at each siding and station on the division. It is self-evident that if all unnecessary delays to each car are eliminated and it is kept moving to the maximum practicable extent, the maximum mileage will be secured from *all* cars and the problem of handling the traffic of the country will have been solved insofar as it is possible to solve it with the equipment now available.

Liberty Bond Holders Please Note

Holders of temporary first Liberty Loan converted 4s and 4-¼s, second 4s and 4-¼s, and third 4-¼s are now entitled to exchange their temporary bonds for permanent bonds with all coupons attached. There is no way for holders of these temporary bonds to collect their interest after the date of the last coupon unless they exchange their bonds for permanent bonds. There are about 4,000,000 individual holders of the Third Liberty 4-¼s and interest on these bonds is due September 15. Holders, however, in order to get this interest must exchange their bonds before September 15. The federal reserve banks have made arrangements for the exchange of bonds and railroad men can make the exchange through a bank, or, in most cases, where the bonds were bought through the railroad company, the company will advise as to how the exchange should be made. The process is simple. It consists in handing in to the bank the temporary bond which now has no coupons attached and receiving in exchange a permanent bond with the new coupons attached. The sale of Liberty Bonds to railroad employees was a great success from the point of view of raising money for the government. It also was of real educational value. The railroad companies went to considerable expense and a great deal of trouble to induce their employees to buy Liberty Bonds, primarily possibly through a

feeling of patriotism, but it is of permanent value to a railroad to educate its employees in habits of saving and especially in accustoming them to investment in securities. It would seem, therefore, that it would be well worth while for each road to call the attention of employees who are Liberty Bond holders to the fact that temporary bonds should now be exchanged for permanent ones.

Frozen Material Stocks

Although it may be slightly incongruous to suggest anything frozen in mid-August, it may be pertinent to refer to the very large amount of money that is tied up in unapplied material at a time when bankers are discussing frozen credits prominently in connection with the scarcity of available capital which the railroads are feeling so keenly. As it is plainly the duty of every railroad to carry the least stock of material consistent with safety, it would be interesting to know what is the lowest quantity of materials that can be relied upon to meet the occasion without embarrassing the operation of the railroad. This is a quantity that should be known for every railroad and should be regarded as much an index to efficient operation of the property as the average train tonnage or weight per loaded car. Has this amount been determined on your railroad and how does it compare with the amount of material neighboring roads are carrying in proportion to the business that you and your neighbor are handling? A reduction in material stocks can often be accomplished without affecting the quantity of material available for the actual current requirements of shop and roadway. It may be effected by cutting out the dead wood or it may be accomplished by centralizing material stocks scattered all over the railroad, but in any event, it calls for a strong centralized organization in which strictly business principles predominate. Such an organization would be a dangerous tool in other than experienced hands and every action must be tempered with consideration for the actual needs of each department.

The Convention Habit

What can the railroads expect to gain by sending their traveling engineers or men from any other branch of the service to a convention? Doubtless this thought has occurred to many executives and may even now be agitating the mind of some official confronted with the question of approving the large expenditure that is necessarily involved in sending a group of traveling engineers to the convention in Chicago next month. But how many executives in this situation have ever considered just what the convention habit has accomplished for American railroads or how important a part the free interchange of ideas between representatives of all railroads has played in promoting their progress and welfare? What would our railroads be doing today if no community of interest were recognized or if each railroad ignored the experiences of the other? The Traveling Engineers hold an intensive convention. They come to Chicago with a serious purpose and the meetings are all-day affairs. But at that, it is the individual contact of the man from Pennsylvania with the man from Oregon and the man from Texas with the man from Ohio that makes the convention a live factor in American railroading. It is the open exchange of ideas and experiences acquired under a great variety of conditions that will get your men out of the rut into which they can easily fall if confined to a single division on your railroad for any length of time. Some roads can well afford to send every traveling engineer on their staff, others cannot. But every railroad should be represented at the coming convention. The consideration that will be accorded the fuel problem in the face of an approaching coal shortage alone justifies a large attendance. Those who are fortunate enough to attend this convention should appreciate the fact that it is not only the expense of the trip, but the time lost at a critical period that may have caused their superior officers to hesitate over permitting them to attend the Chicago meeting. They must attend solely with the idea of acquiring something in the way of knowledge and enthusiasm that will more than justify the trip.

Operate Repair Shops With Less Coal

While the amount of coal used in the operation of railway repair shops is a small proportion, possibly not over 10 per cent of the total coal consumption of railroads, thousands of tons are required annually for this purpose and every effort should be made to use it economically. One of the most important ways in which the coal can be saved is by utilizing exhaust steam from the steam hammers in shop heating systems. A butterfly valve limiting the exhaust steam pressure will obviate any difficulties in hammer operation. Another important way of saving fuel is by the installation of suitable boilers over large forging and annealing furnaces in either blacksmith shops or boiler shops. In this way much of the heat incident to operating these furnaces can be saved and utilized to produce steam, thus reducing the demand on power houses. In machine shops there is a possibility of economizing in power consumption and thus saving fuel. Machines should not be left running when not in use for operations that can be performed as quickly on lighter machines. The practice of stopping all leaks in the compressed air system as soon as they developed should be encouraged. Small air operated devices of doubtful merit use a great deal of air and should be cut out if the work can be done as quickly and easily by hand. Another practice to be condemned is the blowing out of steam pipes and valve chambers with air just before a locomotive leaves the shop. Fuel saved by any one of these methods may not necessarily be large, but the total saving due to the elimination of waste power, waste heat and waste light throughout all the shops would be considerable.

Pere Marquette and the Guarantee

The Pere Marquette was one of the comparatively small number of railroad companies which elected to operate during the six months immediately following the return of the roads to their owners on its own financial responsibility, thus refusing the government's guarantee of a continuation of an amount of net revenue equal to the rental paid during government operation. At the time the company made this choice everything appeared to be in favor of such a course. Under government operation the Pere Marquette had made remarkable progress. The year 1919 was exceedingly profitable to the government, the actual net earnings of the Pere Marquette property being far in excess of the rental which the government was paying the corporation. In the first six months of the calendar year, which includes four months of private operation, the Pere Marquette earned $17,398,000 gross, or something over $2,000,000 more than in the first six months of 1919. Operating expenses, however, ran up to a figure that wiped out all gain in gross and turned a net after the payment of taxes and rentals of $2,206,000 in 1919 into a deficit of $173,000 in 1920. So far as can be seen, this unfavorable showing is through no fault of the

Pere Marquette management. Apparently what has happened is this: The outlaw strike particularly seriously affected some of the connections of the Pere Marquette. Congestion followed and the Pere Marquette, on which loadings were heavy, found itself unable to make deliveries, especially in respect to its eastern connections. Naturally congestion on its own lines followed. So far as can be learned, there was nothing either in change of character of the business handled or the normal cost of handling this business which could have been foreseen when the guarantee was refused, or which will continue to affect the Pere Marquette.

The Second Fuel Commandment: Supervision

The railroads have every right to expect the utmost consideration for fuel economy from every employee that handles fuel. But are they getting it? Do all these men know how to save coal? Have they the inclination to economize? Having set up an adequate organization for the purpose of conserving coal it is obviously the duty of this organization to see that all employees are instructed in the economical handling of fuel and that these instructions are generally observed. If the first fuel commandment is to organize, the second is to supervise. The organization must be capable of supervision and this implies more than will be found on many railroads having an organization for this purpose. *Real supervision means hard work, it necessitates riding more freight trains with green firemen than passenger trains with seasoned crews.* It is safe to say that more than one fuel organization has become discredited because the traveling firemen became too dignified to actually show the inexperienced firemen how to handle the scoop, or because the fuel supervisors have found it convenient to confine their attention to passenger trains, or even because the fuel superintendent has spent most of his time in an office and attempted to prove by the manipulation of figures that he is saving millions instead of devoting all his time and energy to active and constructive supervision over the actual use of fuel. The railroads must have supervision over fuel use if they hope for real fuel efficiency, but this must be supervision that supervises.

Where Will Money Go the Farthest?

It may be too late to undertake any extensive improvements that will afford relief during the coming winter, even if the money be at hand for such expenditures. What mechanical and operating men must consider at this time are the improvements that can be hastily effected with the funds available. Where will this money go the farthest towards fortifying the railroad against the coming winter? Would not a comparatively small expenditure on each engine terminal do more than anything else to eradicate the weak spots that developed last winter? A large terminal on an important railroad was completely blocked a few days ago because a single water crane refused to function. Consider what a few additional water cranes may save you in time and money next winter. A very large percentage of coal chutes are in need of repairs that should not be postponed until the winter months. An extra locomotive crane for coal and ash handling if ordered now may save the day when some coal chute or an older crane breaks down under the stress of winter conditions. The purchase of a single machine tool for some isolated terminal may obviate the necessity for shipping machined repair parts to this terminal at a time when all the trains are running late and the express is unusually heavy. The labor shortage would not be so much in evidence during coming months if some improvement in drop pit facilities or in arrangements for handling heavy engine parts could be arranged for. A hot water boiler washing system would save coal and add materially to the power available at the terminal where engines have always encountered the greatest delay.

What About the Bonus System?

Reconstruction as applied to the present period in railroad history, implies the restoration of practices abandoned during government control if investigation in the light of present conditions demonstrates their worth. One idea which met an ill-timed fate in the tender years of its youth was the bonus plan as applied to maintenance of way work. After about four or five years of general application on a single railroad, the Baltimore & Ohio, this system was being introduced on the Pennsylvania Railroad when the government took over the railroads and the plan was unable to survive the standardizing process of centralized labor control. The giving of increased compensation for extra effort represents an ideal arrangement which has practical limitations as applied to complicated, diversified work such as is done by the maintenance of way forces. The plan also entails the employment of a considerable clerical force. It does, however, accomplish a definite increase in the output per man, and in view of the urgent necessity for making some improvement in this direction, the possibilities of restoring the bonus system should be carefully considered. The fact that the bonus plan was discontinued has an advantage for the roads which once had it in force, in that it enables them to start anew with rates properly adjusted to their past experience, something that would be fatal to a system in actual operation. One suggestion for an improvement would be to extend its application to the supervisor so that he also would be rewarded in proportion to the results obtained on his sub-division.

Motor Truck and Water Competition

A philosopher might find an interesting commentary on the economies of transportation in the recent development of motor truck freight business between New York and Albany. The Hudson river affords a free waterway which can be utilized by boats of large tonnage capacity. Nevertheless, the freight which is carried by water between Albany and New York and intermediate points is very small indeed when compared with the freight which the New York Central and West Shore carries. Now comes the motor truck freight industry which is succeeding in building up a considerable business hauling freight in small units between Albany and New York and intermediate points. The carriage of freight by rail is supposed to be more expensive than by water, and the carriage by motor truck is more expensive than the carriage of freight by rail. The obvious conclusion would appear to be that cost is by no means an all-important factor in determining how freight shall be moved. If it were, the river boats would compete successfully with the parallel railroad and the motor truck would fail to compete successfully with either the railroad or the boat lines. Of course, the motor trucks are getting only a very small proportion of all the freight carried. In other words, there are classes of freight which, on account of the time element or other consideration of service, will move by motor truck rather than by rail even when the charges are higher. There are also other classes of freight which the boat lines can still get, but the great bulk of the freight goes by rail even under conditions which are most favorable to boat service and to motor truck service. Advocates of inland waterways will do well to give a passing thought to these facts.

Freight Moved Breaks Record of 1920

INCREASES in railway operating efficiency have been effected so rapidly within recent weeks that the railways probably are now moving more freight than they ever moved before at this time of year. The number of cars of freight loaded in the week ending August 7 was the largest of the year 1920. It was 942,150 carloads. This was 70,077 carloads more than were moved in the corresponding week of 1919, and only 5,805 carloads, or one half of one per cent, less than the number moved in the corresponding week of 1918.

How great has been the improvement in transportation conditions since the railways began to recover from the effects of the "outlaw" strikes, and to make their drive to establish a new standard of efficiency, is indicated by the fact that in the first week of August the number of carloads moved was greater by 154,000, or about 20 per cent, than in the first week in June. The freight loaded in the first week of August in the Southern, Central Western and Southwestern districts was greater than ever before in the corresponding week of any year. There is no reason for doubting that the improvement in operating results which had been gained throughout the country up to the week ended August 7 has been continued up to the present time, and that therefore, as already indicated, the amount of traffic being moved in the country as a whole is now greater than ever before at this time of year.

Support is given to this view by the statistics regarding the production and transportation of coal. The amount of bituminous coal produced and transported in the week ended August 14 was the largest of the present year, being 11,728,000 tons. Further support is afforded by the statistics regarding the accumulations of freight cars awaiting movement and those regarding car shortage. The accumulations of freight cars had been reduced on August 13 to 79,213, which is the best record yet reported for the year 1920. The number of deferred car requisitions in the United States—in other words, the so-called "car shortage"—also showed a reduction in the week ended August 7 to 119,359, after having shown an increase in the preceding week.

The increase in the amount of traffic being handled, and the reduction of congestion and of "car shortage," are chiefly attributable to the efforts the railways have been making to increase the average miles moved by each freight car daily. As has often been pointed out, every increase of one mile per day made in the average travel of each car is roughly equivalent to adding 100,000 to the available supply of cars. There are no car mileage figures later than those for June available. Statistics for the months for which they are available show, however, that since the railways were returned to private operation the record of car movement has been as follows: March, 23.4 miles as compared with 19 miles in March, 1919; April, when the effects of the "outlaw" strikes were being most felt, 19.7 miles as compared with 19.9 miles in 1919; May, 24.1 miles as compared with 20.1 miles in 1919; June, 25.1 miles as compared with 21.4 miles in 1919.

The railways are still a long way from having effected the improvement in the efficiency of their operation which they have set out to make. So long, however, as they can show by actual results that they are constantly increasing their efficiency and the amount of business handled they cannot be justly criticised by the public if they do not handle all the business offered to them. Just how much greater will be the improvement effected in operating methods and results will depend not only on the efforts put forth by the railway managements, but also on the co-operation they receive from the public, and especially from the shippers and consignees of freight.

Railroads Hauled More Freight, But McAdoo Hauled it Farther

IT WAS ONE of the boasts of the Railroad Administration that under its direction the railroads succeeded in handling a greater volume of traffic during the year 1918 than they had ever handled before. The net ton-miles of revenue freight transported by the Class I roads in 1918—that is, the number of tons multiplied by the number of miles they were carried—aggregated 400,379,284,111, as compared with 394,382,077,643 handled by the same roads in 1917, when they were still under private management. This represents an increase of about 1.5 per cent in the number of units by which the work done by the roads is measured. In 1916 the ton-miles were 362,444,397,129. Many officers of the Railroad Administration were not satisfied with the showing made by their figures, however, and insisted that they were saving so many ton-miles by their "short-routing" campaign, in handling freight by the most direct routes, that the increase in the volume of real business handled must have been greater than the 1.5 per cent indicated by the statistics.

The Interstate Commerce Commission has since published statistics for the Class I roads, however, showing the tons of freight originated on the roads during 1918—that is, the actual amount of freight regardless of the distance it was moved or the number of roads it moved over—which show a total of 1,263,265,890 tons, as compared with 1,264,015,725 in 1917 and 1,202,000,067 in 1916. In other words, under government management in 1918, during 11 months of which the United States was at war, the roads handled 749,835 less tons of freight than they did in 1917, during 9 months of which the country was at war, although under government management they carried the freight a greater number of miles. The *Railway Age* showed some time ago (January 16, 1920, page 219) that according to the official statistics of the Interstate Commerce Commission the average haul per ton of freight in 1918 was the longest ever known, 175.54 miles (over the individual railroad), as compared with 173.75 miles in 1917, and that the amount of unnecessary roundabout routing corrected by the campaign conducted under unified operation of the railroads, although it may have resulted in some slight economies in some instances, was not sufficient to exert a perceptible influence on the economic conditions which for some years have been increasing the average distance over which freight is being shipped. The average haul per ton of freight over the railroads considered as a single system increased from 312 miles in 1917 to 316 miles in 1918.

While there is no particular object at this late day in attempting to detract from the showing made by the Railroad Administration it is at least interesting to note that while the government broke the record for *ton-miles*, the record for the number of *tons* hauled still belongs to private management.

MEMBERS OF THE AMERICAN LEGION who operated trains during the railroad strike last April, and conveyed thousands of commuters to and from New York, are to be placed on trial on charges of aiding the railroads as against the employees, at the New Jersey State Convention of the American Legion to be held at Atlantic City, September 9. Col. William M. Mead, commander of the Capt. Harry B. Doremus Post of Hackensack, who commanded the Legion forces that operated trains on the Erie, is one of those who is named. Colonel Mead has justified his actions on the ground that the strike was unauthorized. "Had it been a genuine union strike none of the legion posts would have interfered," he says.

Letters to the Editor

The Uniflow Engine

NEW YORK.

TO THE EDITOR:

Replying to the communication of F. W. Dean, in your issue of August 13, the locomotive to which he refers is evidently one which was built by the Brooks Locomotive Works, with the central exhaust cylinders of Col. E. A. L. Roberts, whose operations in the torpedoing of oil wells made him famous, and was put in service on the Dunkirk, Allegheny Valley & Pittsburgh R.R. in 1875. After several months' service on that road, it was placed on the Lake Shore & Michigan Southern, and after a few weeks' service on that road, it was returned to the Brooks Works, which sold it in June, 1880, to the Ohio Central.

An illustration of the cylinder and valve of this locomotive, and particulars regarding it, furnished by M. L. Hinman, of the Brooks Works, will be found in the *Railroad Gazette* of October 7, 1898, p. 721. An illustration is also given in the same article, of the central exhaust cylinder of the Shepherd & Clark, U. S. Patent No. 124,980, dated March 26, 1872. The Eaton Patent No. 17,142, April 28, 1857, and Herlinger Patent No. 70,841, November 12, 1867, are also referred to.

The above examples will indicate that what is generally known as the "Uniflow" or Stumpf central exhaust cylinder, was known and put in practice by others than Prof. Stumpf, at comparatively early dates.

J. SNOWDEN BELL.

Col. John Stephens and the Pennsylvania Railroad

NEW YORK.

TO THE EDITOR:

An advertisement of a leading banking institution of this city, which appeared in several issues of a local journal last week, contains a reproduction of an old wood engraving of the "De Witt Clinton" and train, and a paragraph entitled "Progress of American Railways," in which I note the following statement relative to Colonel John Stevens, viz:

> "Stevens and his sons, in 1815, received the first charter granted in the United States for a railroad, and in 1823 they built a road from Philadelphia to Lancaster, which afterwards became the first link in one of the great systems."

By reference to the "History of the Pennsylvania Railroad Company," by William Bender Wilson, Philadelphia, 1899, a standard and interesting work, it will be seen that the foregoing statement is materially erroneous. As a matter of fact, an act of incorporation for the formation of a company "to carry his (Col. Stevens') project into effect," was approved by the Governor of Pennsylvania, March 31, 1823. It was entitled "An act to incorporate a company to erect a railroad from Philadelphia to Columbia in Lancaster County," and nine incorporators were provided for, but neither Col. Stevens nor his sons were among them. (p. 8). "As no practical steps were taken towards building the road, the legislature, in 1826, repealed its charter." (p. 11).

The road was built by the Commonwealth of Pennsylvania, under an act of the legislature of March 24, 1828, contracts for 40 miles of its construction being let in April, 1829, and a single track from Philadelphia to Columbia was completed in April, 1834. (pp. 11, 12).

While ample credit was due, and is given by the author, Mr. Wilson, to Colonel Stevens, for his earnest, though unsuccessful, efforts to build the road, and disclaiming any disposition on the part of the writer to disparage his energy and ability, the foregoing correction is made in the interest of historical accuracy.

J. SNOWDEN BELL.

The Railroads and the College Man

STATE COLLEGE, PA.

TO THE EDITOR:

I have been reading a pamphlet generally known as the "National Shopmen's Agreement." As you have stated in your columns, the agreement does not prohibit the employment of railroad special apprentices, in fact it makes no mention directly or indirectly of the college man.

The more I learn of the situation, and I have before me facts from many sources, the more am I amazed at the action of some railroads in refusing to employ college graduates. An official of a large Eastern road writes: "The railroads at the present time are bound by agreements with the Federated Craft, which prohibits us from employing college graduates as special apprentices. I do not know how long this agreement will be effective, but as long as it remains in effect we will have to abide by its provisions." Is there any agreement other than the one referred to above, consummated in October, 1919?

On the other hand, a prominent official of another road writes: "In acknowledgment of your letter, would say that we expect to continue to handle special apprentices just as we have done in the past."

Why this difference of interpretation?

I have read the paragraphs referring to the number of apprentices and how they shall be appointed. The purpose of the several articles of agreement on this point seems to be very clear, that they are discussing the training of *workmen*. Surely the shop crafts unions did not regard the training of a special apprentice as a means of developing workmen. They know full well that the railroads need technical men and that sooner or later their own interests will suffer if college graduates are not trained along the lines of their special ability on the railroad. If the agreement is intended to exclude the technical graduate, it would at least be sound judgment to state that fact; nothing could be lost by clearly defining the issue. If there was such a purpose in mind, should not graduates in civil, electrical, mining and chemical engineering come under the same restrictions?

If the name "special apprentice" confuses the purpose of his training with that of the regular apprentice, let the course be designated as the "graduate engineers' course," or a similar name suggestive of his place in the organization.

Another college year is rapidly approaching. A young man writes, "I had expected to take your course in Railroad Mechanical Engineering. I was brought up in a railroad town and want to follow work in a motive power department, but I am told that the railroads don't want engineering graduates. Is that so? If it is, I prefer to start out in other lines." My answer was in substance that I know of two roads that need him and if he has the real stuff, they want him; but I know of many others that will need him but I don't know now whether they really want him.

Whatever the interpretation, some of the outstanding facts are too apparent to be lost sight of.

(1) The railroads, as a whole, are not getting sufficient young men of special engineering ability.

(2) The industries want the college graduate, are sending to the colleges for them and are paying a living wage.

(3) The colleges are asking why this branch of engineer-

ing activity is discriminating against the college man.

(4) Mechanical engineering teachers are advising their students to keep out of the railroads.

(5) Young men in the making are willing to pay the price of success but they are not going to mark time with an industry that does not clearly define its policy or take care of its men.

The situation is *not* serious or acute, providing the railroads will go along as heretofore and not read into the agreement something which was never put there. It *is* serious if the railroads are marking time, for in any event, many of them are now playing a losing game.

The colleges are trying to do their part in the training of men. What shall we answer when asked the straight question, "Do the railroads want the college man?"

A. J. Wood,
Prof. Railroad Mech. Eng.

Some Supervising Officers Overlooked

New York.

To the Editor:

Most men who have made a study of labor conditions were anxious to see just what effect, if any, would result from the decision handed down by the Labor Board at Chicago on July 20.

The $.85 per hour rate for shop mechanics authorized by the board will, of course, be of material help and should enable the men in charge of the shops to secure a better class of men providing the outside industries do not repeat what was done in 1918 shortly after supplement 4 to General Order 27 was issued. The industries were paying slightly higher rates than those afterwards authorized by Supplement 4 and proceeded promptly to further raise their rates of pay so that the $.68 per hour rate given to the roads would not compete with them.

The Navy has now under consideration demands that have been made for higher rates; if these are granted the ship yards are very liable to follow suit. There will in this event be a reviving of the unrest among the shop men just at the time when it is very necessary to let wage matters rest and give attention to the business of again trying to build up an efficient organization.

The wages paid mechanics by the Navy and ship yards are now higher than those authorized by the Chicago award; while their base is $.80 per hour, two and one half times the rate is overtime allowance in the yards and in the Navy the bonuses paid, together with time that is allowed the men for days they do not work, make their $.80 rate for mechanics better than that now paid by the roads.

Rebuilding an efficient shop organization unfortunately was given a serious setback by the Chicago award embodying a continuation of the rules, working conditions and agreements in force under the authority of the United States Railroad Administration; very little headway can be made in bettering conditions until these rules are materially altered and modified. There are a great many rules in the so-called National Agreement which effectually block building up an efficient organization. The supervisory forces are faced with a most difficult task.

The unions have energetically looked after the interests of the men. The supervisory forces relied entirely on the roads seeing that their interests were properly protected. The basis of all the wage adjustments was to give the most to the lower paid men. This is a beautiful idea—one that sounds fine to the ears of the general public. But has it not been carried a little too far? The supervisors in many instances have been shamefully treated!

It can hardly be expected that men of the ability required under the present conditions—men who measure up to the standards exacted by the difficult tasks now confronting the supervisory forces in the shops—will stay in the service of the roads unless they are given the consideration they justly deserve. The war put an entirely new angle on the nature of their tasks; it is hard work to build up a good working organization, even in normal times; constant energetic effort must be put forth now or no headway will be made. The old efficient team work of all hands must in some manner be brought back to life in spite of the obstacles that have been placed in the way. This requires a high degree of talent on the part of those who must supervise the work. Will it be recognized?

F. Orman.

Employees' Compensation Laws—Their Present Status in Different States

New York City.

To the Editor:

Reading your report (June 11, page 1686) of the annual meeting of the Association of Railway Claim Agents, held at Atlantic City in May, it occurs to me that your readers may be interested in a general statement of the present status of compensation legislation.

Something over ten years ago, the Association of Railway Claim Agents appointed a committee to consider compensation legislation, and we drafted the first suggested act providing different amounts for specific injuries in compensation and death cases, based on number, relationship and age of the next of kin, and proportionate to their needs. At this time there was not a state in the Union with a compensation law. The federal government had a so-called compensation act, which went into effect August 1, 1908, but it applied only to the relatively few government employees engaged in hazardous employment.

At present the states of Arkansas, Florida, Georgia, Mississippi, North Carolina and South Carolina are alone without compensation laws.

This whole movement is of very recent growth. While New York was the first state to enact compensation laws and two were put on the statute books in 1910—one, a compulsory law, was held unconstitutional, and the elective act is still on the books, but literally "dead,"—it is fair to say that in 45 states and territories the present compensation laws were enacted between May, 1911, and January, 1920, less than nine years. There are 14 compulsory and 31 elective acts, in addition to the federal act. In 39, some form of insurance, security or proof of financial responsibility is required of the private employer. In 28 there is no "state insurance," so-called.

There are limits in either time or death payments in 35 laws, minimum 240, maximum 416 weeks; and money limits, $3,000 to $6,000, in 22.

In Nevada, New York, North Dakota, Oregon, Washington and West Virginia and under the federal law payments in death cases run until re-marriage or death of widows. The Oklahoma law does not apply to deaths.

Waiting periods are prescribed in all states except Porto Rico and Oregon. Payments for permanent total disability run for life in 17; limited in all others. All are on a percentage wage base except that Oregon, Washington and West Virginia (as to death) are on a flat rate or pension basis. There are medical provisions in all except Alaska, Arizona and New Hampshire; limited in time or money in all but seven.

With the exception of Arizona, New Hampshire and (in special instances) Ohio, the compensation remedy is exclusive. In Arizona and New Hampshire employees have

an option of election after injury between compensation and a suit for damages. In Ohio an employee has this option where the employer is in default for insurance premiums, and has an action for damages against his employer for injuries caused by wilful negligence or failure to comply with the statute with reference to safety guards, etc; this in addition to compensation. Incidentally, in Ohio the right to recover damages for injuries caused by a third party is retained, without loss of compensation. In most states where the injured employee elects to take compensation this right of action is subrogated to the employer on payment of compensation.

In Porto Rico, Massachusetts, Oregon, North Dakota, Nevada, Washington, Wyoming and Texas, employers are required to insure the payment of compensation. There is no right of self-insurance. This right and privilege is very valuable to the large employer; it is absolutely essential to a railroad company whose employees are entitled to compensation only when engaged in intrastate commerce, as there seems to be no way of overcoming the difficulty of applying a premium rate to the payroll of railroad employees who may regularly or irregularly engage in both interstate and intrastate commerce.

It is the intention of the Claim Agents' Association to appoint various state sub-committees and endeavor to have the broad general compensation principles made uniform in the different states; and especially to preserve the right of self-insurance and secure it in the states where it is now prohibited. Efforts will be made to have compensation made the exclusive remedy against the employer in the states of Arizona, New Hampshire and Ohio.

FRANK V. WHITING,
General Claims Attorney, New York Central.

The Maintenance Settlement

CHICAGO.

TO THE EDITOR:

On page 151 of *Railway Age,* issue of July 23, 1920, you published an article dealing with the subject of claims against the Railroad Administration. In discussing that phase of the subject which has to do with the differences between the positions of the carriers and of the railroad administration, it is stated that the carriers contend that the basis of comparison should be that of the number, quantity and quality of physical units of materials used as distinguished from the so-called accounting method relied on by the railroad administration, which is based on the money expended and the man hours of labor employed. This article is somewhat inaccurate and by reason thereof becomes misleading in that it tends to show that the carriers are not willing to accept an accounting method of comparison.

The carriers have no objection to an accounting method of comparison, have not set up any engineering method and they are perfectly agreeable to having the comparison made in the form and manner provided for in the contract. They do not contend that the director general's obligation is measured by the quantity or quality of physical units of materials used as a thing apart and distinguished from the accounting method of comparison. However, they do contend that the measure of maintenance is the same relative amount, character and durability of physical reparation, which is the precise language of the contract, contained in the last lines of paragraph c of Section 5 thereof, and that these words are the determining factor which must be satisfied by the equation applied to the test period expenditures.

In the second column, at the top of page 151, the statement is made that "the standard contracts between the companies and the government provided that the property should be returned in substantially as good condition as when taken over with a proviso that the expenditure of the same amount of money as in the test period, after making proper allowance for differences in *prices, wages, volume of traffic, etc.,* should be taken as a compliance with that covenant." This, also, is an inaccurate statement. I desire particularly to call your attention to an error made in stating that the contract calls for a proper allowance for the differences in price, wages, volume of traffic, etc., where, by merely substituting the word "price" for the word "cost," which is the correct word, your correspondent unconsciously puts an entirely different meaning into the contract. What the contract does call for is an adjustment to make due allowance for differences that may exist between the *cost of labor and material and between the amount of property taken over and for any difference in use,* and the carriers contend that the differences in the cost of labor are not synonymous with differences in prices of labor or rates of wages but must fully reflect the change in cost of labor resulting either from the difference in wages or the difference in the amount of time required to accomplish the same amount of physical reparation.

In some of the earlier drafts of the contract the word "price" of labor was used in place of the word "cost." Later it was recognized that in view of the change in relative productivity of labor an equation confined to the difference in price would be insufficient, and the language was changed, and the word "cost" substituted specifically for the purpose of enlarging the equation to include all factors which might be involved in causing the cost of labor to change.

It is very evident that the railroad administration in its desire to limit the amount of its obligation to the carriers is attempting to use such a basis of adjustment as will minimize to the greatest extent possible the effect of the proviso in its determination of the equation factor. It has been seeking for some time to lay the foundation for the claim that the railroads are seeking to avoid being limited to the terms of the contract and is striving to develop the thought that the administration is not responsible for inefficiency of labor. In my judgment, they will have accomplished a good share of their undertaking if they can establish the belief, through the press and otherwise, that the provisions of the contract calls only for an equation for differences in "rates of wages" or "prices of labor," instead of "cost of labor."

As a matter of fact, the mere inefficiency of the labor itself is only one of the causes which resulted in the cost increasing more than the mere increase in wages. Among the factors which resulted in increasing the cost of labor was the failure to secure the material needed promptly, so that in many cases the laborers had nothing to work with and lost much time on that account. Furthermore, the local federal officers were hindered in their plans for carrying out their maintenance work by frequent changes in plans at Washington, so that they did not know from month to month, and until late in the season, what work they would be permitted to do. Also owing to the fact that all questions of organization and discipline were subject to review at Washington it was practically impossible for the local officers to make any substantial efforts to enforce disciplinary measures. Again, the change from ten to eight hours' basis increased the cost of labor at least 15 per cent in many instances. None of these things are chargeable to the inefficiency of labor itself but are more properly chargeable to the inefficiency of management of labor.

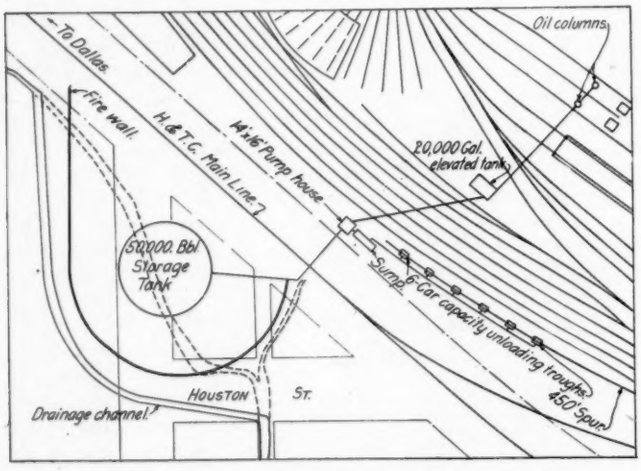
The article referred to goes on to say that the lesser companies are gradually conceding that the position taken by the railroad administration is correct, but that the larger companies are still contending for some other basis. It appears to be true that some of the lesser companies, because of the urgency of their needs, are giving up their contentions and are settling with the government for whatever they can get, realizing their helplessness, but I hardly consider that this situation indicates that they are conceding the correctness of the railroad administration's position. ENGINEER.

Installing Facilities for Handling Locomotive Fuel Oil

New Storage and Service Stations on the Missouri, Kansas & Texas Present Interesting Problems

By R. M. Stubbs
Engineer of Bridges, Missouri, Kansas & Texas of Texas, Dallas, Tex.

AMONG THE FEW improvement projects of any considerable magnitude undertaken by the southwestern railroads since the war, has been the equipping of a number of Texas lines for the use of oil as fuel for locomotives. The long haul from coal fields producing a suitable quality of locomotive fuel, the abundant production of the Texas oil fields and the possibility of delivering Mexican oil at the Gulf ports in large quantities at low cost, have combined to make this change in fuel especially attractive for the railroads of southern and western Texas.



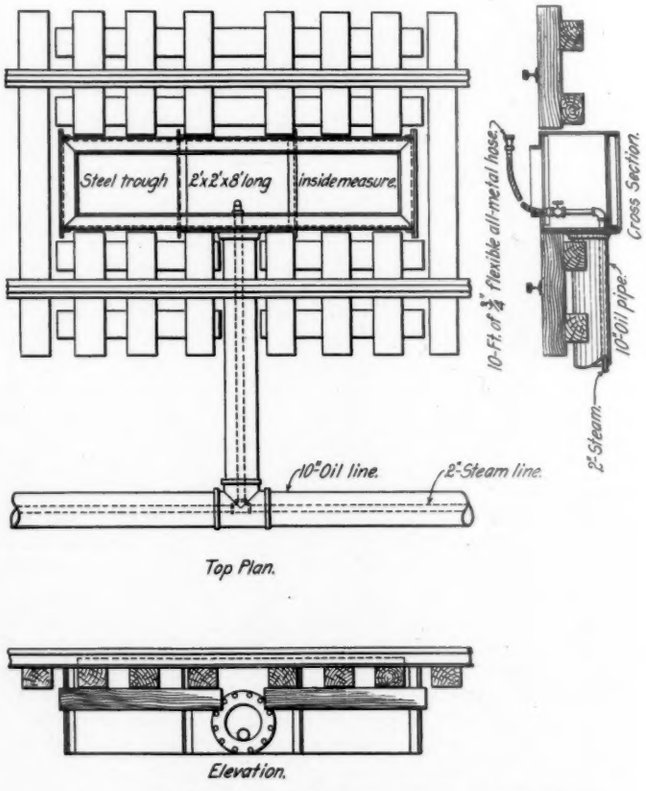
Typical Oil Service Installation at One of the Engine Terminals

For the Missouri, Kansas & Texas, of Texas, and its subsidiary, the Wichita Falls & Northwestern, the change from coal to oil, which had been under consideration prior to the war, was definitely determined upon during the summer of 1919. Contracts were entered into, with the Panhandle Refining Company for delivery at Wichita Falls, Texas, of fuel oil for use on the W. F. & N. W., and with the Mexican Petroleum Corporation for Mexican oil from the Tampico field, to be delivered at Galveston to fill the requirements of the M. K. & T. of Texas. In September work was started on the facilities necessary for unloading and storing oil, and for delivering it to locomotives, and the necessary changes in the locomotives. This work is now nearing completion. The first oil burning locomotives were placed in service last fall. In February, the change was made general on the Smithville district, comprising the lines from Waco south to Galveston and San Antonio. By June 1 practically all the service stations included in the plans were handling oil, though the full contemplated storage capacity at a number of points was not yet available for use.

Fewer Fuel Stations Required

The Mexican oil is delivered to the railway at Galveston through a receiving and storage station constructed and operated by the Petroleum Corporation. From Galveston the oil is moved in tank cars to the various service stations, the location, general makeup, and capacity of which are shown in the table. As the oil has a thermal efficiency per pound more than 50 per cent greater than that of bituminous coal, and its use involves less wastage in handling and firing, the same tender capacity permits a considerably longer spacing between service stations than is possible with coal, and it is in general unnecessary to maintain intermediate stations between engine terminals.

The installations comprise facilities for unloading the oil from the tank cars, for holding in storage a supply varying in amount with the location and importance of the station and for delivering it into the tenders of the locomotives. The oil is unloaded from the tank cars direct into steel troughs, two feet by four feet in section and eight feet long,

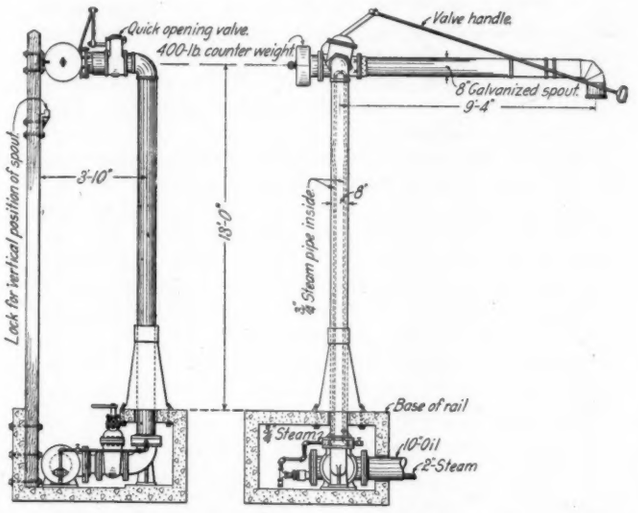


Steel Troughs for Receiving Oil from Tank Cars

which are spaced 40 ft. on centers between the rails of the unloading tracks. As a precaution against fire or accident, these troughs have hinged wooden covers, protected by galvanized sheet iron, which are kept closed except when cars are being unloaded. An outlet pipe in the side of each trough connects it to 10-in. manifold pipe leading to an underground sump tank, also of steel. The sump tank, generally of a capacity of 12,500 gal., is placed as deep in the ground as is consistent with the suction of the pumps,

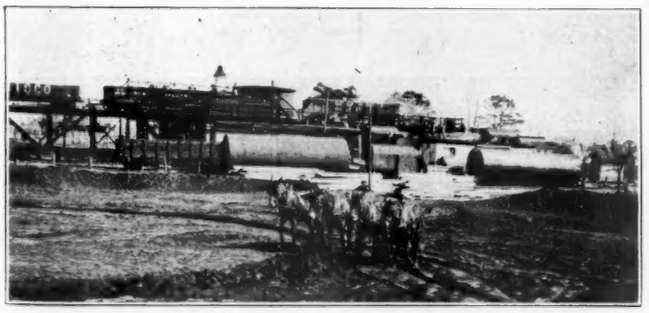
in order to obtain the maximum fall through the manifold pipe from the unloading troughs.

Fairbanks Morse "Santa Maria" pattern steam pumps fitted with special valves suitable for handling oil, have been used at all stations. Two sizes of pumps were purchased with capacities of approximately 100 and 200 gal. per min., respectively. For the larger stations, increased capacity and security against failure are provided by duplicate installations. Pumps are so connected that they can draw, as desired, from either the sump or the storage tank, and discharge to the storage tank, the delivery tank, or direct through the delivery columns to locomotive tenders. Eight-inch wrought pipe lines lead from the pumps to storage and delivery tanks.



Form of Column Provided for Delivering Oil to Locomotives

The storage capacity varies at different stations according to the quantity of oil consumed, and the distance from the source of supply. In general, it was the intention to provide storage for about two months' needs. At each of the larger terminals there is a steel storage tank of the type commonly used by the oil companies, with capacities of 55,000, 37,500,



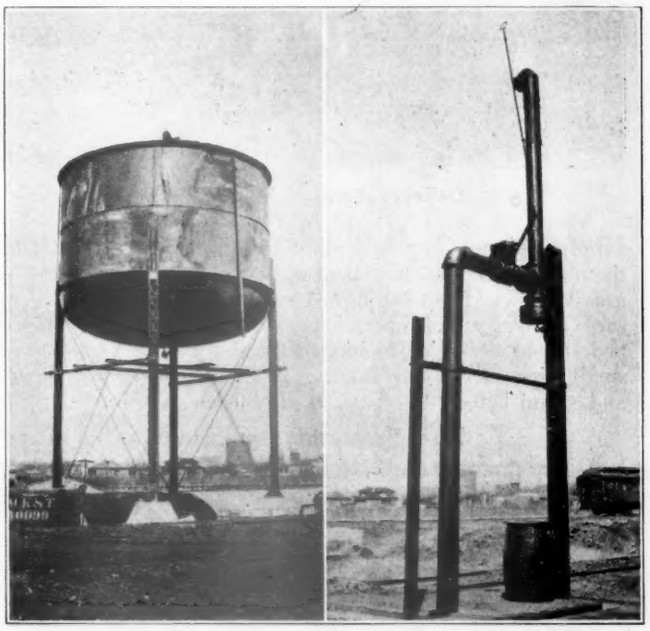
Grading for a 15,000 Bbl. Tank at Hughes Springs

or 15,000 bbl. These are flat bottomed tanks, erected on a level earth bed, sometimes with a thin surface of sand to equalize the bearing. They are surrounded by an earth levee or "Fire-wall," enclosing a volume 50 per cent in excess of the tank capacity, to provide a margin of safety in case of fire or accident to the tank.

At these larger stations, 20,000-gal. delivery tanks deliver oil by gravity to the service columns. These tanks are horizontal cylinders elevated on steel bents 20 ft. above the rail level of the engine tracks. A smaller type of station combines the storage and delivery in one 100,000-gal. tank, elevated on a steel tower, similar to tanks in common use in railroad water service. On the W. F. & N. W., all the tanks used, both for sump and delivery, are reclaimed tank car shells and the delivery tanks are mounted on framed timber bents.

Ten-inch lines connect the gravity delivery tanks with service columns on the engine tracks. The telescopic spout in common use in railroad water service cannot be used to advantage with oil on account of the unavoidable drip. While this is negligible in water service, with oil both the loss by dripping and the resultant fouling of tracks and grounds make it desirable to use some more rigidly connected type of spout, even at the cost of some loss in convenience of handling. The design used by the M. K. & T. consists of a counter-balanced spout swinging in a vertical arc on a packed slip joint. This joint is in a horizontal arm, parallel with the track to be served, leading at the required height from a vertical column of eight-inch pipe, and supported beyond the spout on a timber post. A quick-opening valve, set in the horizontal arm, is operated from the locomotive tender by a lever which swings with the spout.

Mexican fuel oil of the low gravity in use as locomotive



A Combined Storage and Delivery Tank and a Fuel Oil Crane

fuel (the M. K. & T. contract specified 15 to 17 deg. Baume), is very thick when cold, having almost jelly-like consistency. To be handled successfully it must be heated to a temperature of approximately 120 deg. This requirement adds greatly to the difficulty of designing satisfactory plants for handling the oil, increases the first cost of the installation, and furnishes a source of continual trouble in maintenance. In the M. K. & T. plants, steam heating pipes of two inches maximum diameter are laid inside all oil pipe lines and all tanks contain heating coils, varying with the size of the tank, supplied with steam.* Most of the tank cars used for transporting this oil contain heater coils, and when the cars are spotted on the unloading tracks, these coils are connected to the station heating system by one-inch flexible steel hose outlets from each unloading trough.

Pipe lines are not enclosed but are painted with asphalt paint and buried two feet in the ground. If a suitable

* For details of the manner in which this was worked out by the Gulf, Colorado & Santa Fe R. R., see the article on Handling Heavy Oils at Locomotive Fuel Stations, published in the Railway Age of April 9, 1920, page 1147.

covering were available which would be water tight, yet permit of easy access for repairs, it would be possible to run the steam lines along the oil pipes on the outside. Covering the pipe would add to first cost, but such an arrangement would not only reduce maintenance costs by rendering the steam lines accessible, but would result in a more gradual application of heat to the oil lines. Several line breaks have occurred as the result of inexperienced pumpmen turning on an excessive amount of steam, or neglecting to turn off steam after the oil was sufficiently heated.

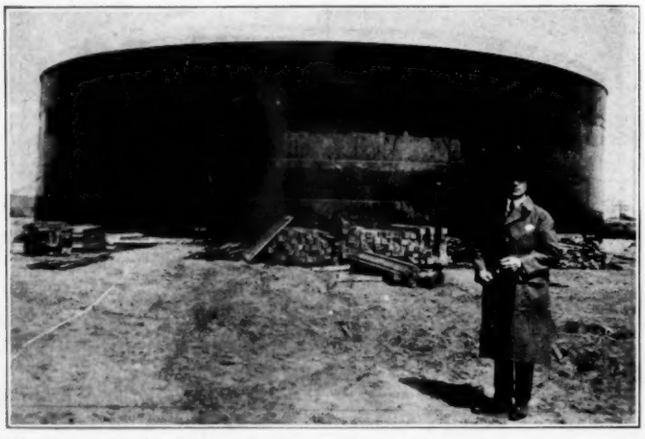
Wherever oil stations are located at terminals four-inch

Delivery Tank at Waco, Tex.

supply lines to the power plant boilers have been run from the delivery tank, the burners being fed by a controlled gravity flow. In installing oil burners two things are necessary for successful operation. There must be an impact pedestal of fire brick to intercept and flare the flame, and a small pipe coil located in the fire box to superheat the oil and steam before they pass to the burner.

Fire Protection Important

As fire protection, all large storage tanks are directly connected with the live steam supply by 2½-in. pipe lines, for



A 55,000 Bbl. Storage Tank

smothering any tank fire. Hand operated Foamite Fire Foam engines of a capacity of 40 to 250 gal. have been placed at each station. Bond wires are installed at delivery columns, bonded five or six rail lengths, to prevent the possibility of fire from sparks from stray currents passing from the rails to the pipe lines through a locomotive being served with oil. Regulations of the Board of Fire Underwriters have been complied with in the design and construction of facilities. No serious objection on the part of local authorities to the location of tanks was met with except at Houston, Tex., where it was impossible to secure permission to erect a storage tank of any description above the ground surface. This made it necessary to use an underground reinforced concrete tank, and pump direct from it to the delivery columns, doing without the usual gravity delivery tank.

All locomotives in use on the Missouri, Kansas & Texas of Texas and the Wichita Falls & Northwestern are being converted as rapidly as possible from coal to oil burners. The change is accomplished by placing in the coal compartment of the tender separate oil tanks of the same shape as the coal space, necessary piping connections and burners are installed and the fire-box changed to accommodate the oil. This work is being handled by W. H. Maddocks, mechanical engineer, under the general direction of F. K. Tutt, mechanical superintendent.

The installation of piping and machinery, including unloading facilities and delivery tanks and columns, at all Texas points, has been carried out under contract by the National Boiler Washing Company of Chicago. This company also prepared the detail designs for pipe work and connections. The storage tanks are furnished and being erected by the Chicago Bridge and Iron works, and asbestos roofing applied to them by the Johns-Manville Company. The improvement was started under the direction of J. M. Metcalf, principal assistant engineer, while the writer has been in direct charge of construction.

FUEL OIL STATIONS—TEXAS LINES

Station	Capacity of Tanks			Capacity of Pumps	Number Track Troughs	Number Cranes	Total Capacity Gallons
	Storage bbl.	Delivery gal.	Sump gal.	gal.			
Denison	55,000	20,000	12,500	2-200	6	2	2,892,500
Greenville	37,500	20,000	12,500	2-200	4	2	1,982,500
Dallas	None	100,000	12,500	1-200	3	1	112,500
Fort Worth	37,500	20,000	12,500	1-200	5	2	1,982,500
Waco	55,000	20,000	12,500	2-200	6	2	2,892,500
Granger	None	100,000	12,500	1-200	3	1	112,500
Smithville	55,000	20,000	12,500	2-200	5	2	2,892,500
Houston	None	55,000	None	1-200	3	2	55,000
San Antonio	"	100,000	12,500	1-200	3	2	112,500
Hughes Spgs	15,000	20,000	12,500	1-200	4	2	812,500
Walnut Spgs	None	20,000	10,000	1-100	1	1	30,000
DeLeon	15,000	20,000	12,500	1-200	4	1	812,500
Stamford	None	100,000	12,500	1-100	2	2	112,500
Wichita Falls	55,000	20,000	12,500	1-200	None	2	2,892,500
Altus	None	2-10,000	10,000	1-100	1	1	30,000
Elk City	"	2-10,000	10,000	1-100	1	1	30,000
Woodward	"	2-10,000	10,000	1-100	1	1	30,000
Forgan	"	10,000	10,000	1-100	1	1	20,000
Galveston	4-55,000	None	None	2-1,000	—	—	11 440,000
Trinity	3,000	"	"	1-100	None	1	156,000

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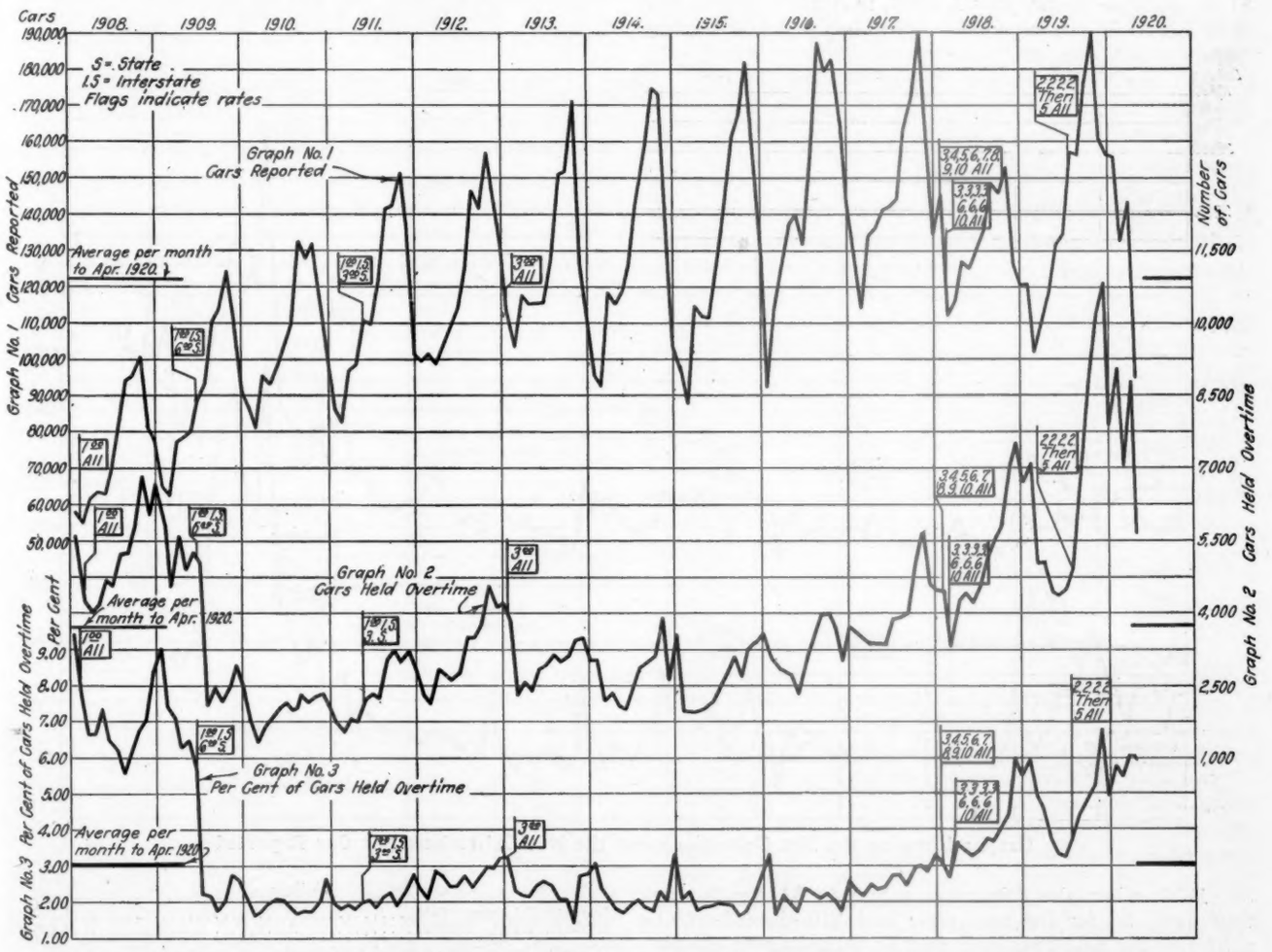
Board of Directors of the United Association of Railway Employees of North America Who Called at the White House to Ask Secretary Tumulty to Intercede for Them with the Railroads

Pacific Car Demurrage Bureau's Campaign

Efficiency of Stringent Straight Rules and High Demurrage Rates Is Shown by Graphs

THE PACIFIC CAR DEMURRAGE BUREAU, San Francisco, Cal., campaigning for car conservation, has been advocating and assisting in the education of railway employees, shippers and the public in an effort to convince all that stringent, straight rules and an increase in demurrage rates are necessary if the carriers are to meet the present transportation crisis successfully. This bureau in abiding by its slogan "car detention causes car shortage, delay, waste, demurrage; car conservation gives surplus cars, speed service, economy" has prepared a pamphlet containing the shape of stringent straight rules and a high demurrage rate to force the delinquent shipper to load and unload cars promptly. Our long experience in car detention matters in our several states under different rules and rates permits of but one conclusion, i. e., that a high demurrage rate and stringent straight rules alone will secure the results desired.

"At the present time, owing to conditions having been brought home to them, shippers are more than ever inclined to co-operate with the carriers in any fair measure that will



Graphs Showing the Cars Reported, the Cars Held Overtime and the Per Cent of Cars Held Overtime

graphs showing the comparative car conservation resulting from the various demurrage rules and rates in effect in California for the period from 1908 to 1920. An analysis of the facts brought to light by these graphs is appended to each of them. The recommendations and platform of the Bureau, under the management of R. C. Munholland, were quoted in the *Railway Age* of July 30, page 177. The introduction to the pamphlet, the graphs and their analyses follow:

"It has been our invariable practice to sell the shipper, not demurrage, but car conservation. However, in this we are encouraged or discouraged by the backing we have in bring about their salvation. It has, therefore, been our thought that a campaign of education should be inaugurated to convince the shippers, as well as the carriers, that stringent straight rules and an increase of demurrage rates are absolutely necessary if we are to tide over the present crisis.

"In the charts that follow we show the fluctuations under various rules and rates. Figures used in preparing the charts were taken from our monthly reports filed with the Interstate Commerce Commission and our various state commissions; they are, therefore, authentic and their accuracy can be relied upon."

ANALYSIS OF GRAPH NO. 1

Peaks

Highest, October, 1917.....190,488 cars
Lowest, October, 1908.....100,988 cars
The peaks covering the greatest number of cars reported occurred in different years as follows:

August—1910 and 1916
September—1914
October—1908, 1909, 1911, 1912, 1913, 1915, 1917, 1918 and 1919

Valleys

Lowest, February, 1908..... 55,186 cars
Highest, February, 1917.....114,328 cars
The valleys covering lowest number of cars reported occurred as follows:

January—1916
February—1908, 1909, 1910, 1911, 1913, 1914, 1915, 1917, 1918 and 1919
March—1912

Average

Average cars handled monthly.....122,400 cars

Note—We have shown opposite number scales at left and right of all charts short lines to designate average per month for entire period to April 30, 1920. By glancing across or laying a string or rule, you will readily ascertain the comparative fluctuation above or below this average.

"During the period the $6 rate was in effect on state and $1 on interstate traffic, July 1, 1909, to April 30, 1911, there were 2,291,552 cars reported. From July 1, 1918, to April 30, 1920, when the demurrage rate was $3 for the first four days, $6 for the next three and $10 thereafter; also a $2 rate for first four days and $5 thereafter on all traffic, there were 3,071,102 cars reported, an increase of 779,550 cars or 34.02 per cent. (Comment on detention during these two periods follows on other charts.)

"It is said the car shortage at the present time is 200,000 cars. Say the average cost per car is $2,000, it would require a total investment of $400,000,000 to overcome the alleged deficiency in equipment, not to mention interest, taxes and depreciation thereon. Does it appear like a sane business policy by the same ethics governing commercial business to tie up capital, incur depreciation, interest and taxation on sufficient equipment to carry the peak load of four months of the year, when traffic is normal or sub-normal for the balance of eight months of the year? Since the public pays in the long run would it not be better to have strict car conservation 365 days in the year and have equipment available when needed? If all abuse of equipment were eliminated it would enable carriers to operate with less equipment, thereby avoiding congestion on line as well as at terminals, make rapid movement en route and in general reduce the cost of operation and secure maximum efficiency in the service which will be reflected in the freight rate.

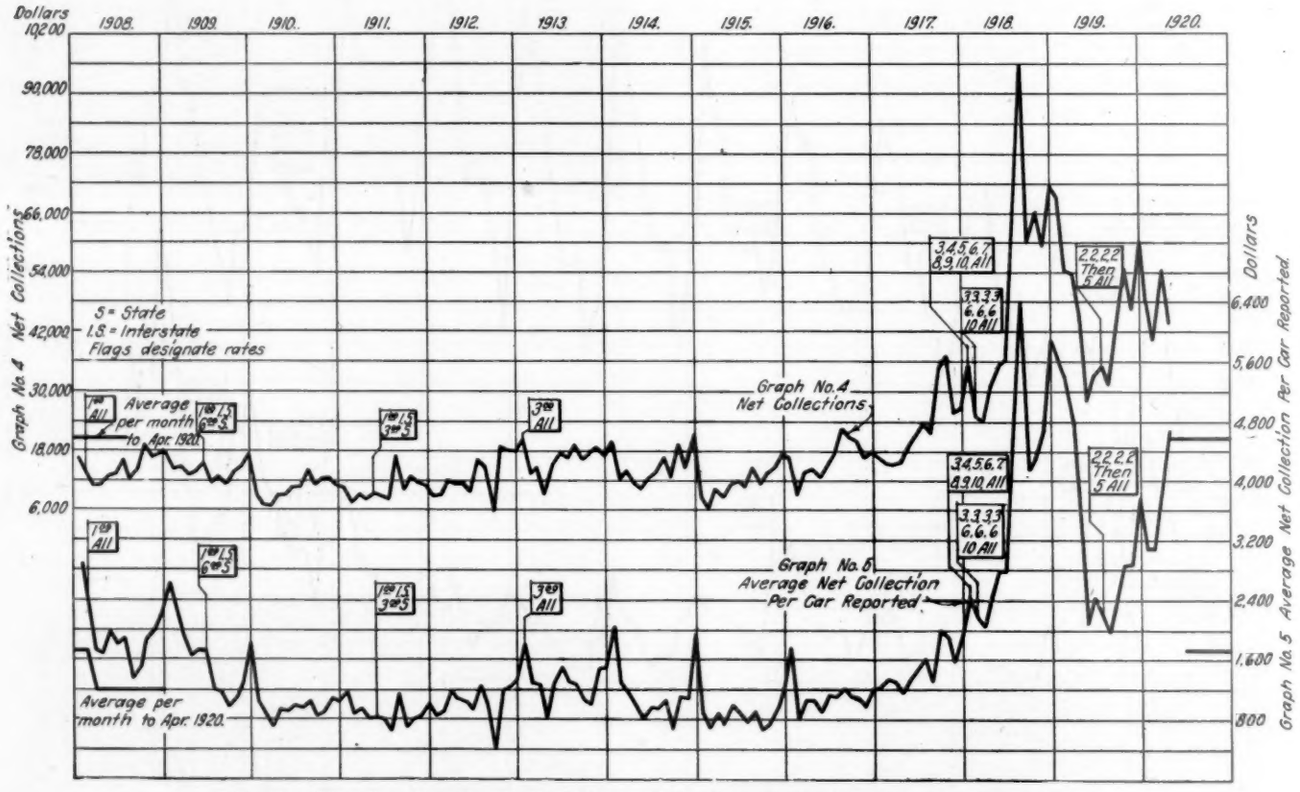
"I claim there never has been a car shortage in this country, but that through abuse of equipment there is, and always will be, a deficiency of empty cars available for loading until such time as the proper corrective measures are put into actual practice."

ANALYSIS OF GRAPH NO. 2

Peaks

Highest, November, 1919.....10,846 cars
Lowest, November, 1910..... 2,292 cars
The peaks covering the greatest number of cars held overtime in different years occurred as follows:

January—1909 and 1913
September—1911 and 1916
October—1908, 1912, 1914 and 1917
November—1910, 1918 and 1919
December—1915



Graphs Showing the Net Collections and the Net Collections Per Car Reported

Valleys

Lowest, February, 1910.....1,290 cars
Highest, April, 1919.....4,430 cars

The valley points occurred as follows:

February—1910, 1911, 1912, 1913, 1916, 1917 and 1918
March—1908 and 1915
May—1914 and 1919
July—1909

Average

Average cars held overtime monthly.....3,800 cars

As in the case of total cars reported, as shown in graph No. 1, the high and low peaks in cars held overtime occurred in October and February.

During the period, July 1, 1909, to April 30, 1911, when there was a $6 rate on state and $1 rate on interstate traffic, there were only 44,712 cars held overtime; whereas, from July 1, 1918, to April 30, 1920, when the rate was $3 for the first four days, $6 for the next three days, and $10 thereafter; and $2 for first four days and $5 per day

thereafter, there were 149,238 cars held overtime or under demurrage, or an increase of 104,526 demurrage cars or 235.78 per cent.

"Manifestly a high demurrage rate has this effect on the average railroad man and shipper, that, when a car earns $6 a day it is thought of in terms six times greater than if the rate were only $1 a day, and, it naturally follows, is handled and conserved accordingly."

ANALYSIS OF GRAPH NO. 3

Peaks

Highest, January, 1908..... 09.39 per cent
Lowest, December, 1910..... 02.68 per cent

The peaks covering greatest per cent of cars held overtime for each year were as follows:

January—1908, 1909, 1913 and 1916
November—1918 and 1919
December—1910, 1911, 1912, 1914, 1915 and 1917

Valleys

Lowest, October, 1913..... 01.41 per cent
Highest, August, 1908..... 05.44 per cent

The valleys covering lowest per cent of cars held overtime were as follows:

February—1910, 1912, 1916, 1917 and 1918
April—1911
May—1914
June—1919
August—1908
September—1909 and 1915
October—1913

Average

Average per cent of cars held overtime per month..... 03.05 per cent

"During the period July 1, 1909, to April 30, 1911, when there was a $6 rate on state and a $1 rate on interstate traffic, the percentage of cars held overtime was 01.95 per cent, while during the period of July 1, 1918, to April 30, 1920, when the rate was $3 for the first four days, $6 for the next three days, and $10 thereafter; also $2 for first four days and $5 thereafter, the per cent of cars held overtime leaped to 04.86 per cent, or an increase of 02.91 per cent, or practically an additional three cars for each hundred handled. The greatest per cent of cars held overtime occurred in December, indicating that market and business conditions at that time are the cause of cars being held in excess of other periods."

ANALYSIS OF GRAPH NO. 4

Peaks

Highest, August, 1918.....$95,004
Lowest, August, 1910..... 14,280

The peaks in net collections per month were as follows:

January—1909, 1913 and 1919
August—1910, 1911, 1916 and 1918
October—1908, 1912 and 1917
December—1914 and 1915

Valleys

Lowest, September, 1912..... $5,750
Highest, May, 1919..... 27,815

The valleys in net collections per month were as follows:

February—1911, 1915 and 1916
March—1910, 1917 and 1918
April—1908 and 1913
May—1914 and 1919
September—1909 and 1912

Average

The average net collections per month for entire period.....$20,500

"It is only natural that there should be fluctuations in the net collections for the simple reason that adjustments of disputed accounts are made 12 months in the year, but the figures here given are of interest to shippers, representing as they do the actual amount of money for which they are penalized by reason of detaining the carriers' equipment.

"Especially is it of interest to note that the net collections during the period of the $6 rate on state traffic with $1 on interstate—July 1, 1909, to April 30, 1911—were $239,004, while from July 1, 1918, to April 30, 1920, when there was only a $3 rate for the first four days, $6 for the next three days, and $10 thereafter, and a rate of $2 for first four days and $5 thereafter, the net collections were $1,149,063, or an increase of $910,059, or 380.77 per cent. In other words, the increased cost to the shippers, because of the present low demurrage rate, amounts to an actual loss of $37,891 per month or $1,263.08 per day. Surely so large an amount is worthy of the utmost consideration because it bespeaks not only the loss in car conservation, but the financial loss as well. As usual the consumer pays while he is awake as well as asleep. Is it not a fact that if this waste were eliminated, or materially reduced at least, it would have a most wonderful effect on the car supply by a material increase in the number of cars available for loading and wipe out the abominable car shortage?"

ANALYSIS OF GRAPH NO. 5

Peaks

Highest, August, 1918..... $ .6382 per car
Lowest, November, 1910 ..... .1087 per car

The peaks in the net collections per car reported were for months as follows:

January—1908, 1909, 1911, 1913, 1914, 1916 and 1919
August—1918
September—1917
November—1910
December—1912 and 1915

Valleys

Lowest, September, 1912 ..... $ .0406 per car
Highest, March, 1918..... .2044 per car

The valleys in net collections per car reported were during months as follows:

February—1916
March—1910 and 1918
April—1913 and 1917
July—1911
August—1908 and 1919
September—1909, 1912, 1914, 1915

Average

The average monthly net collection per car reported was... $ .1700 per car

"It is illuminating to note that the demurrage cost to shippers for each car handled under the $6-$1 rate was only $0.1043, while under the following sliding scale rates of $3, $6 and $10, and $2 and $5, it jumped to $0.3742 for each car handled, indicating a net saving of $0.2699 for each car had the old rate continued in effect, or an increase of 269.09 per cent. Surely no shipper could ask for a better argument in favor of a high demurrage rate and stringent straight rule. The net collection per car reported can be likened to a tax on every car loaded and unloaded, and the possibility of a net saving of 27 cents on each carload of freight handled is easily understood, even by a layman, as it is a net gain to everyone concerned."

Intrastate Advanced Rate Cases

WASHINGTON, D. C.

JOHN E. BENTON, solicitor of the National Association of Railway and Utilities Commissioners, has issued a supplemental bulletin, similar to that published in part in last week's issue, regarding the status of proceedings before the various state railroad commissions on the railroads' applications for increases in rates. The details given in the supplement as well as the information concerning those states to which reference was made in the original report but omitted in last week's issue, are as follows:

The following states have definitely disposed of the carriers' applications for rate increases: California, Illinois, Iowa, Maryland, Michigan, Montana, New Hampshire, New Jersey, New York (2nd District), Pennsylvania, Rhode Island, Virginia, West Virginia, and Wisconsin.

In the subjoined statement Mr. Benton summarized reports from states not covered in the previous bulletin, and also transmitted additional information with reference to the action taken in several of the states covered by the earlier bulletin:

California: Commission on August 17 authorized increase of 25 per cent on freight rates and 20 per cent on passenger fares on steam railroads, interurban railroads and boat lines, effective on one day's notice.

Florida: Hearing held on August 18 to consider the proposed increases in freight, passenger and miscellaneous rates,

and to determine what adjustment, if any, should be made in present rates.

Illinois: Illinois decision referred to in previous bulletin recognizes the apparent present financial necessities of the carriers, but treats the situation as an emergency which may properly be dealt with in a temporary order, granting increased rates without prejudice to any future proceeding which may involve the lawfulness of such advanced rates. The freight, miscellaneous and excess baggage rate increases were allowed in substantial harmony with those granted by the I. C. C. upon condition that "it is understood that this increase is authorized upon condition that these applicants shall render adequate and efficient service." Passenger fare increases and the surcharge on Pullman fares are denied for want of jurisdiction to increase statutory passenger fares. Increased rates on milk and cream were denied because of the inability of the commission to determine from the evidence presented the amount of the increase, if any, which should be made.

Iowa: At hearings held on August 5 and 17 Iowa shippers did not oppose the carriers' applications, and understood that rates in harmony with those determined upon by the I. C. C. have been authorized.

Kansas: Hearing to begin September 14.

Minnesota: Hearing for trunk lines held on August 16 and those for short lines will be set later. The commission indicates position is that it has no jurisdiction over statutory passenger rates. No petitions have been filed with the commission asking for increases in excess baggage, pullman and milk and cream rates.

Nebraska: Hearing held August 3. Decision not yet announced.

New Jersey: Increases in harmony with those authorized by I. C. C. allowed, except as to intrastate shipments of sand, gravel and broken stone for road building and repair. On this subject the commission said: "It is the opinion of the board, giving due consideration to all the sources and to the public nature of the work for which the material is used, special rates may be made on shipments of sand, gravel and broken stone for use in road building and repair, and this would not be an unjust and unreasonable discrimination either on intrastate or interstate traffic."

New York (Second District): Application for increased freight rates granted, but power of suspension for 30 days is reserved. Passenger rate increases were denied on the ground that passenger rates are held by statute and cannot be increased by the commission. Increases on milk and cream and excess baggage were also denied.

New York (First District): The commission has allowed carriers' applications to increase freight rates, but denied increased passenger rates, including rates on milk and cream.

Ohio. Hearing to begin August 16. Ohio has a three-cent passenger fare law, and a serious question to be presented at the hearing is whether the commission has authority to grant an increase beyond that rate.

Oklahoma. Hearing to begin August 23.

Oregon. Commission has under consideration permitting carriers to file tariffs on ten days' notice, subject to attack or suspension after hearing to begin August 16.

Pennsylvania. On August 10 the commission entered an order in essential part as follows: "It appearing that after a thorough and exhaustive hearing and investigation of the necessity for an advance in rates for transportation by the steam railroads subject to the jurisdiction of the Interstate Commerce Commission, as evidenced by a copy of the entire record of such hearing and investigation filed with this commission, the Interstate Commerce Commission has found and determined that the existing rates should be increased on a general percentage basis fixed by it, and become effective on five days' notice to the public. . . . It Is Ordered: That carriers by railroad in the state of Pennsylvania be . . . permitted to file special supplements to their existing tariffs, . . . making increases therein not exceeding the percentage of increase on existing rates, fares and charges fixed by the Interstate Commerce Commission, such increases to become effective on five days' notice. . . . This permission does not preclude the determination of complaints that may be filed against such rates and charges which shall be subject to investigation and correction."

Rhode Island. On June 2, 1920, the commission issued an order: "That permission be . . . granted . . . to put into effect without the statutory . . . notice . . . tariffs covering . . . interstate traffic under whatever conditions the Interstate Commerce Commission may authorize for interstate traffic in . . . Ex Parte 74, without prejudice to the right of the commission to inquire into the reasonableness of any rates advanced thereby, and to take such action as may be advisable under the law, said tariffs to become effective upon one day's notice."

South Dakota. Hearing in progress.

South Carolina. Hearing held August 19 on freight and passenger increase. Request of American Railway Express Company for increase of 12½ per cent also heard.

Tennessee. General hearing held August 20. Four-cent passenger fare and freight rate increases authorized by the I. C. C. have already been allowed the Tennessee Central Railroad on account of its financial condition.

Texas. Hearing held August 4 and 12. An early decision is expected.

Virginia. Commission allowed all increases in harmony with decision of I. C. C.

West Virginia. The commission on August 10 granted carriers authority to increase class and commodity freight rates 40 per cent, following the order of the Interstate Commerce Commission, effective August 26, after five days' notice. West Virginia has a two-cent fare law and its effect after September 1 is under consideration. A further hearing will be held September 15 as to passenger rates, Pullman charges, excess baggage and milk rates. Pending final decision such rates now in force will continue in effect.

Wisconsin. Increases in freight, switching, miscellaneous, and milk and cream rates allowed by commission on same basis as those allowed by I. C. C. Increased passenger fares denied for want of jurisdiction over statutory fares. Increases in commutation rates were allowed with a maximum of two cents per mile fixed by statute. Excess baggage rates to be considered further in connection with tariffs to be filed.

Wyoming. Hearing held on August 16. Case now pending.

Photo from International

U. S. Railroad Artillery Train Touring Country on Recruiting Mission

What is Value for Rate Making Purposes?

Suggesting a Rational Method Peculiarly Applicable to Solution of the Railroad Problem

By Wm. G. Raymond
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In 1898 the Supreme Court of the United States of America delivered itself of an opinion[1] that has been the subject of discussion in one way or another ever since, and it is probable that even now no one knows just what was meant by the opinion. It is an opinion that has reduced public service enterprises to the status of public servants working for a wage. It is an opinion which in its practical application has taken much value from privately owned public utility enterprises, and but for the invention of the quantity known as going value and its use by far-seeing supreme court judges, would have taken away all inducement for the investment of private capital in these enterprises.

This opinion is as follows: "What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience." This sentence of the opinion was followed by another which with omissions immaterial to the subject in hand was, "On the other hand what the public is entitled to demand is that no more be exacted from it . . . . than the services rendered . . . . are reasonably worth."

Comparatively little attention has been paid to the second sentence. In one case[2] at least it was used, but with an interpretation that is even more troublesome than the application of the first sentence. This interpretation is that the value of the service to be considered is "the value of the service rendered to each individual" rather than the value of service to the customers in the aggregate.

In the case of the ordinary public utility, to charge what the service is worth to each individual would result in almost as many different rates as there are individuals served, because with all of the things that affect value considered, it would be quite doubtful whether the value to any two, or certainly to any large number of consumers would be the same per unit of service. One consumer of water has a good well or a good cistern, and the value of public water service to him is not the same as to his neighbor who has no well or cistern. One consumer of water attaches great importance to a daily bath, to a high degree of cleanliness about his establishment, to a well sprinkled and kept lawn or garden, and to him the value of a water supply is much greater, not only because of the greater quantity used, but per unit of service rendered, than it is to his neighbor who is less particular concerning his person and his premises.

One consumer of gas uses it only for lighting; another uses it only for cooking; and a third uses it only for power production in a factory, large or small; and the value per unit is not the same to any two of these three. Indeed, as between two consumers who use gas for cooking, the value of the service per unit is greater to that one who attaches a considerable value to the element of cleanliness than to that one who considers only the question of economy of fuel.

The value of a railroad fare to him who goes on a business errand, resulting in great profit to himself, is altogether different from the value of the same fare paid by the passenger who is on a pleasure excursion, an errand of mercy, or on a hurried trip to the bedside of a dying relative.

It is thought that there has been no change from this opinion by the United States Supreme Court, but the Supreme Court of the state of Maine has given an interpretation which if adopted, helps some. In furnishing directions to some appraisers it says,[3] "In the aspect now being considered the worth of a water service to its customers does not mean what it would cost some one individual or some individuals, to supply themselves, for one may be blessed with a spring and another may have a good well. It means the worth to the individuals in a community taken as a whole. It is the worth to the customers as individuals; but as individuals making up a community of water takers. In the very nature of things, a water system is usually intended to supply a somewhat compactly settled community, or a community whose geographical elements are somewhat restricted . . . such a community must in general stand as a whole. The rates in such a system are generally and properly uniform, although the expense of supplying some, as those nearer the source of supply, is actually less than that of supplying those at the outermost limits."

If this interpretation will stand in the United States Supreme Court, the difficulty introduced in the Kansas City Stock Yards case will disappear. We are still left with the difficulty of finding what is the worth of the service in any given case, but as will appear later, this seems to be much more easily determinable than is the value on which the serving company is entitled to a fair return as stated in the first sentence of the opinion first above quoted.

No court has ever told us what value is, nor how it is to be determined. In another part of the decision from which the opinion first above quoted is taken, the court said, "and in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stocks, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property."

Now, it is submitted that no person can consider original cost of construction, the amount expended in permanent improvements, the amount and market value of bonds and stocks, present compared with original cost of construction, the proper earning capacity under particular rates prescribed by statute, the sum required to meet operating expenses, and possibly other matters, not mentioned, and give each such weight as must be just and right, and arrive by such consideration at anything like the reasonable value of any particular property, unless paramount weight is given to one of the items, or at most two, and the others are either ignored or held in the background of the person's mind to cause him to add or subtract a judgment amount from the value determined from the consideration of the one or two principal items.

As a matter of fact this is just what has come about, and almost uniformly in the United States Supreme Court the cost of reproduction as of the time of valuation has been the controlling item on which value has been based. Not "the

[1] Smyth vs. Ames, 169 U. S., 466, p. 546.
[2] Cotting vs. Kansas City Stock Yard Company, 183 U. S., 89.
[3] Brunswick and Topsham Water District vs. Maine Water Company 99 Maine, 381.

present as compared with the original cost of construction," but simply th epresent cost of construction or, as it is commonly called, cost of reproduction. And it is feared that engineers are responsible for this outcome.

Probably cost of reproduction is a better name than present cost of construction, because if one may judge from the decision concerning the propriety of including the cost of removing and replacing paving over mains, as given in the Des Moines Gas Case[4], it would appear that it is not present cost of constructing the property now existing at any given date, but the present cost of doing for the present property what was done when it was produced, that is to say, to reproduce the work that was produced originally. By originally is meant originally with respect to the property now existing and not simply the original plant as it may have been when first constructed.

There can be no question but that the present cost of producing a property which consists largely of mains laid under paved streets would include the cost of taking up and replacing pavement over the lines of those mains, but the decision in the Des Moines case, above referred to, says that this is not an item to be included in an estimate of the cost of reproduction, when that cost is used as an item of value, if the mains in question have been laid before the paving.

However much masters and courts may have said that they were considering all the matters to be considered in arriving at a judgment value of a property, what they have done in almost every case is to determine from the evidence a reasonable amount to represent cost of reproduction as of the time of the valuation, to subtract from this a sum determined to represent the accrued depreciation of the physical items, and in rare cases to add a sum to represent the appreciation of physical items, and to the total thus obtained to add one more item which has been called "going value," and which was invented without a name and first applied in the Kansas City Water Works case[5].

The language used in that case with respect to the element now being considered was as follows: "The fact that it is a system in operation, not only with a capacity to supply the city, but actually supplying many buildings in the city,—not only with a capacity to earn, but actually earning,—makes it true that 'the fair and equitable value,' is something in excess of the cost of reproduction."

Later on this "something" was given the name "going value," and although some inferior courts have declared that there is no such thing as going value, or that if there is it is sufficiently accounted for when a complete cost of reproduction is allowed, the U. S. Supreme Court has consistently followed the opinion of the Federal Court in the Kansas City Water Works case, and has declared quite recently in the Denver Water Works case,[6] that the item of value is existent and is an element of value attaching to a property over and above its fair cost of reproduction.

And so it has come about that the value of a public utility enterprise is most commonly found by estimating the cost of reproduction new, the amount of depreciation existing in the property at the date of valuation, the amount of appreciation, and the item of going value, and adding these four quantities with their proper signs. The sum is called the fair value of the property.

It ought to be clear without argument that the value of an enterprise cannot be determined by assigning a certain value to the physical plant used in connection with the enterprise and another value to the business of the enterprise. The plant would be worth only salvage without the business, actual or potential, and the business could not exist without the plant. The two go together and cannot be separated. The business adds to the value of the physical property and the physical property is absolutely essential to the business. It seems to be absurd therefore to find the value of a public utility or any other business by assuming or estimating some costs of construction and guessing at an item known as business value and adding the two together, and calling the sum value.

No attention whatever is paid to the earning capacity of the property. Ordinarily no attention is paid to the fact that the franchise under which the enterprise is operated, is a short term franchise about to expire or already having expired, if such be the case. The property is considered to be a public necessity and of indefinite life.

Even going value is treated in many of the decisions as a cost rather than a value, although it is called value. It is considered to be what is sometimes known as development expense, that is to say, the deficiency in earnings, below the fair return on investment, which is almost always the result of early years of operation. But ideas are very confused in this matter because the development expense that is found is, as a rule, what it is assumed would be incurred in building up at once a property of the magnitude of that under consideration in any case, although the actual development expense, if any, was an expense occurring when the property was comparatively new and presumably of very much less magnitude than at the time of valuation, and more or less wild guesses have to be made as to how long it would take to develop a property of the magnitude of that under consideration in the community in which it is, with conditions as of the time of valuation. This procedure does violence to our common sense, since it is inconceivable, at any rate with respect to the larger communities, that they could have reached their importance as at the time of valuation, without a previous creation and long time growth of the utility under consideration.

In most of the cases in the Federal and Supreme Courts, the item of going value has been simply guessed at, the master or the court saying that in his opinion it ought to be about "so much,"—the master in the Des Moines Gas case frankly admitting that he could not say why it was "so much," but he just thought it was.

In a recent most excellent and illuminating report in the San Francisco Gas Case[7], Standing Master in Chancery, H. M. Wright, takes the ground very positively that there is but one value to such utility, that the value to sell or purchase is identical with the value for rate making, and he proceeds to determine that value in the case in question by adding going value to cost of reproduction less depreciation, and this seems to be the very best that our courts have been able to do with the question "What is the fair value of the property of a public utility on which it is entitled to a fair return?" It is feared that this is a fact for the reason that no better evidence has been forthcoming from the engineer witnesses.

What was contemplated in that old decision of Smyth vs. Ames when the principle was first enunciated? The purpose of this article is to assert that the question has not been properly answered as yet and to try to point out what seems to be a far more rational procedure under the law than has heretofore been obtained.

Did the court mean value or did it mean something else? Is it practicable to use value as a basis for rate-making in the case of a regulated public utility, and would it not be better to try to follow the second sentence quoted in the beginning of this paper rather than the first—that is to say, would not it be better to base charges or rates on what the service is worth rather than on the basis of a fair return on the fair value of a utility company's property?

[4]Des Moines Gas Company vs. City of Des Moines, 238 U. S., 171, June 14, 1915.
[5]National Water Works Company vs. Kansas City, 62 Fed. 853, 27 U. S. App., 165, July 2, 1894.
[6]Denver vs. Denver Union Water Co., 246 U. S. 178, March 4, 1918.
[7]Pacific Gas and Electric Company vs. City and County of San Francisco, et al. Not decided at the time of writing.

The court said in the decision from which the quotation was made that one of the things to be considered in arriving at value is "probable earning capacity under particular rates prescribed by statute," but is that a possible consideration in connection with a rate case? Why the court itself has said in effect that the value of a public utility property at any time in a rating question cannot be based on its earning capacity, because this earning capacity depends upon its rates and its rates are in question. And yet it is fundamentally true that the value of any property developed and used for gain and devoid of any element of sentimental value is a function of the dependable net earning capacity of the property.

Now, if this earning capacity is limited by statutory rates, the statutes fix the value of the property and the rates cannot be found by the consideration of fair return on the value, because the value is fixed by the rates.

Is it possible that the court meant original investment with such additions, abandonments, depreciation and appreciation of physical items as may have accrued? It seems almost certain that it could not have been value that the court meant when it said value. It seems almost certain that the word was misused and that its misuse has continued, founded on this precedent, until this day.

Misuse of the Term "Value"

There is one sort of public utility not commonly called a public utility, the rates for service of which are founded on what its service is worth rather than on the value of the utility's property or enterprise. This is the banking industry. Statutes in various states fix the limit of interest rate that shall be charged and this is possible because of the general recognition of the worth of the use of money. Curiously enough no matter what may be the value of money at any time, the worth of its use seems to remain fairly constant, varying through only a small percentage range as compared with the percentage range of the value of money itself as a purchasing medium.

Seven or eight per cent was considered a fair return for public utility service before the war and apparently is considered a fair return rate at the present time, when the value of the dollar is perhaps only about half what it was before the war.* The interest rate charged by banks, while on the average a little higher, perhaps from 10 per cent to 15 per cent higher than before the war, is by no means twice as high, and if one's money were invested in a public utility yielding a 7 per cent return before the war and one could now dispose of his interest at par, the same money could be reinvested at 7 per cent. But to build a new utility like that in which the money had been invested would cost twice as much as that utility had cost, so that if the investor were to put his money into the construction of a new utility he might hope to secure only half the return that he had realized from the previous investment.

The merchant who is selling goods is probably earning the same rate of profit that he earned before the war on, let us say, twice the former cost of his merchandise and is thus earning twice as much in numbers of dollars as before the war. If the purchasing power of the dollar has been cut in two the merchant is in practically the same position that he was before the war. But the utility, held to a fair return of 7 or 8 per cent in these times of high prices, is earning only the same number of dollars as it was earning before the war, if its business is considered to be the same, which means that it is actually securing in value only half as much as before the war and therefore is not in nearly so favorable a position—financially—as it was before the war.

If the purchasing power of the dollar has been cut in two, the worth of the utility service to its consumers is at this time twice as much in dollars as it was before the war. But unless the utility's property is valued at twice as much as it was before the war, it cannot earn a proper return for the service it renders. This would seem to argue somewhat in favor of cost of reproduction at present day prices as a proper method of valuation, because by such a method the property would be valued at approximately twice what it was before the war and therefore at the same fair rate of return would be earning twice as many dollars for its service as before the war, or the same number of dollars in purchasing value.

But it is not necessarily a good argument for this method of valuation if another rational method can be found to provide for fair earnings, because cost is value only by accident. If fair earnings are based on the worth of the service rather than on a fair return on the value of the property, it appears to be possible to find this other method which is within the law.

Perhaps it must be assumed that the two parts of the opinion already discussed, namely the fair return on fair value sentence, and the worth of the service sentence, are equivalent statements; that fair return on fair value must of necessity result in charging what the service is worth. These sentences surely could not be contradictory in a single opinion. So it may be argued just as well that what the service is worth will produce a fair return on the fair value of the property used. It is believed that this second conception, proceeding from worth of service to value of property rather than from value of property to worth of service, which seems to be practically an impossible procedure under modern regulation, is the one rational interpretation of what should be done in a given case to conform to the law as expressed in the Smyth vs. Ames case.

A Rational Method of Calculating Value

One is driven into inconsistencies, violent assumptions and absolutely baseless guesses in applying the cost of reproduction, less depreciation, plus going value theory of the value of a property, and it would seem to be high time that a more rational and defensible procedure in determining the value of property and proper rates for service should be developed by the courts. Perhaps this can be brought about if engineers in giving their testimony can make it appear that their procedure in arriving at the conclusion to which they testify has been proper and rational and in accordance with the law. This doesn't necessitate changing the law at all; it only means interpreting it in a more rational way than it has been interpreted heretofore.

It would seem to be necessary for one only to speculate for a little while on the fact that the value of any business concern is based on what it can earn, that its earnings are controlled by the public, if it is a public utility, and that therefore to say that its rates shall be such as to yield a fair return on a fair value of the property is simply a gross absurdity if it means that the value is to be found first and the rates established afterwards, because this cannot be done, since the value must depend on the rates that are established. And yet this is what is being done constantly in all of our courts, led by all of our engineers, under what seems to be a mistaken notion of the necessary sequence of procedure. Possibly this arises from two facts—one the fact that in the Smyth vs. Ames decision the fair return on fair value statement precedes the worth of the service statement, and the other that people are commonly accustomed to think of earnings on the investments as a rate on the investment, which they immediately misinterpret in applying this notion to a regulated industry as equivalent to value. Certainly no greater mistake could be made than to understand that investment is synonymous with value. Each investment has its own particular value and is itself not that value. The

*Note: This statement was written before the recent rise in interest rates.

investment of one hundred dollars may result in a creation hundred dollars. The value of the investment is one thousand dollars.

Now let us see if we can proceed from the second principle to the first and determine reasonable rates without respect to value—rates based on what the service is worth, and from the resulting earnings determine the fair value of utility property so that finally we may arrive at the conclusion that the fair value of a utility property in the mind of the court when writing the opinion in the Smyth vs. Ames case, is that value a fair return on which results from charging the consumers of the service rendered what the service is reasonably worth.

It is believed that in competitive businesses it is always cost that forms the basis of the charge to customers. One competitor may be able to produce his goods at a lower cost than another, and hence with the addition of the same profit rate, will be able to undersell his competitor. It becomes necessary then for the competitor to lower his profit rate or improve his producing methods. In non-competitive businesses, unregulated, the charge is always based on what the traffic will bear. The owner of a protected invention sets the price at that which he thinks will yield him the largest return. He fixes what in economics is known as the monopoly price. This is not the highest price at which some of his goods will sell, nor the lowest price at which he can sell at some small profit, but the price in between these two limits which combined with the quantity of goods sold will yield him the largest net return.

But in a non-competitive, regulated business, such as we have come to regard our public utilities, we ought to—if we can—fix the fair price for the service rendered and then allow the utility to earn what it may be able to earn, charging not more than the maximum price. This is our procedure with the banking industry.

But we cannot fix a fair price for such commodities or services as public utilities have to sell. Within reasonable limits, over a considerable territory, the value of the use of money varies within narrow limits, and a fairly uniform price maximum can be fixed, and, as a matter of fact, is fixed by statutes in the various states. In a new country with large risks and unsettled conditions the rate is always higher than in an old country with stable conditions. But the same is not true with respect to the commodities and services furnished by public utility concerns. A thousand feet of gas is not worth the same in the city of New York as it is in the city of Chicago or in the city of St. Louis or in Oklahoma City, or in the village of Podunk, in the state of New York, primarily because the cost at which a consumer can supply himself with gas or its equivalent in heating or lighting power is altogether different in New York from what it is in Chicago or St. Louis or the other places mentioned. There may be other reasons why it is worth different sums in these different places, having to do with the uses to which it can be put; but if this element is to be introduced, then, as was indicated in an earlier part of this paper, there would be almost as many worths to a thousand feet of gas as there might be consumers. The result seems to be that with respect to a publicly regulated property, the property of a public service corporation, the cost of the service must be the basis of charges, must indeed be the basis of estimating worth of the service.

The community of X can establish a gas plant and supply itself with gas at some certain cost. But rather than do this itself in what is ordinarily the inefficient methods pertaining to public work, it prefers to ask some other corporation to establish a plant and to supply the gas. No corporation can be found which will be willing to undertake this at cost, because men doing business must earn a profit, else they cannot live. Corporations doing business must earn a profit else they cannot live, and the community of X must recognize this and be willing—if it prefers to have its gas enterprise developed by private interest—to establish a rate for the service which will be equal to the cost and such a profit as will induce the private interests to undertake the enterprise.

Now the investors who lend their money to the corporation proposing to undertake this enterprise for the community of X—whether they lend their money on promissory notes (bonds which carry a definite rate of return) or on certificates of stock which carry either a definite rate of return or no fixed rate of return, must be satisfied, before they will invest their money with the corporation, that what it can earn is at least equal to the cost of the service it renders and a profit considerably in execss of that necessary to yield an ordinary interest rate on the money invested. Therefore the things to be determined are (1) the amount of the investment necessary to produce the required plant; (2) the cost of furnishing the service; and (3) the rate of profit that the community will be willing to allow the corporation to earn on the cost of its service, rather than undertake the enterprise itself.

This price of service that the community is willing to pay, made up of cost and a profit rate, must be assumed to be the worth of the service to the community, and in this there is but one quantity that must be estimated or determined by judgment, and that quantity is the profit rate. In case a dispute arises some time after the plant is in operation, as to what constitutes the proper profit rate, this matter must be settled by a court, and judgment must be used. Courts have hesitated to say what is a fair rate of return. They have said that a given rate is confiscatory or not confiscatory, but they have not been willing thus far to fix the minimum rate that will not be confiscatory. To the layman it would appear to be the duty of the court to deliver an opinion when any given case is before it in which the question arises as to what is the fair rate of return. It is recognized, however, that this is merely the opinion of a layman, unlearned in the law, and there may be some good reason why the court should not say what the fair rate of return is in any given case. It doesn't appear to be clear that making such a decision is a legislative function, but it must be somebody's function, and if not legislative, then it would seem to be judicial. It is recognized clearly that it is a legislative function to order particular rates for services, but it is not clear that it is a legislative function to determine what is a fair rate of return for money invested in a given enterprise.

Now then if the worth of the service is determined to be its cost plus a profit that a community is willing to pay, rather than serve itself, it ought to be easy in any given case to arrive at fair rates for service, and at any rate to arrive at a gross fair earning of property. We should proceed thus: (1) Determine the actual reasonable investment in the plant, and the reasonable rate to be paid for money so invested by the corporation that is doing the business. (2) Determine the cost of operation from the books of the company. (3) Determine the reasonable annual allowance to be reserved for accruing depreciation. (In our minds we must divorce the corporation from its stockholders. The corporation—a legal individual that is doing the business—must secure the money necessary for the enterprise, and it must be assumed that it will have to pay a going rate of interest for this money whether it is borrowed on bonds or certificates.) The interest is one element of the cost of service. The operating costs, as these are commonly kept in the books of the corporation, are comparatively easy of ascertainment. There is sometimes some difficulty in distinguishing between cost of service and expenditures that really belong to capital, but are sometimes confused with operating expenses; but it is not a serious matter to find the cost of operation. It is not difficult either to determine a reasonable sum that should be laid aside annually to provide for

the growing depreciation of the physical property. This is an item of the cost of service.

If operating cost contains allowances for all contingencies, these three items—the interest on the investment, the cost of operation, and the depreciation allowance, constitute the total cost of the service. In times of high prices these costs will be larger than in times of low prices. But the interest item and the depreciation item will not vary much, and hence in times of very high prices—meaning times of low value of a dollar—it will be necessary to allow a somewhat higher profit rate on the cost of service than in times of low prices or high value of the dollar.

Therefore at any given time—when the question of the establishment of a fair rate has arisen, we may proceed to determine what the fair rate should be by estimating the total cost of service made up of the three items of interest on the investment, cost of operation, and depreciation allowance, and adding to the sum of these three a profit sum determinated by multiplying the sum of the three items of cost by a reasonable profit rate. The total sum of the two items, cost of service and profit, constitutes what should be the gross earnings of the serving company, and these gross earnings will furnish the basis for the determination of fair rates when the quantities of products sold for various purposes are known.

The Smyth vs. Ames decision says that what the public is entitled to demand is that no more be exacted from it than the services rendered are reasonably worth, and the foregoing procedure seems to establish the reasonable minimum worth of the service which is rendered. We have thus complied with one provision of the law at any rate in what appears to be a really rational and fair procedure, without subterfuge, without wild guesses, without the attempt to separate two things that are inseparable and then add them again; we really seem to have arrived at a fair estimate of the reasonable worth of the service rendered. The public cannot demand that it shall be charged less than this, and the company cannot demand that it shall be permitted to charge more than this.

Fair Value

Can we proceed now from the basis thus furnished to find the fair value of the property so that we shall have two estimates that shall be harmonious—a fair value on which a fair return will be earned by rates based on the worth of the service?

Could anything be simpler? We have determined the interest on the investment and the profit to be earned and the sum of these two divided by fair rate of return will give the value of the property.

This is not a value that is capable of division into value of physical items and value of business. If it were capable of such division, perhaps the cost of the physical items would represent physical value and the difference between that and the value just found would be the business value. But neither of these is what it would seem to be under such a division. As has been said, the physical items are worth only salvage without the business, and the business could not exist without the physical items. One gives value to the other, and how much of the total value belongs to one and how much to the other is a question that cannot be answered; but the result is the fair value on which a fair rate of return will be the basis of fair charges equivalent to the worth of the service.

The method of arriving at gross earnings described in the foregoing has one disadvantage which to some persons may seem to be so serious as to prohibit its use. This is that there appears to be not only no incentive to economy of operation, but rather an incentive to extravagance, since profit is to be a rate of return on operating expense, among other things. It is suspected that under continuous regulation fixing rates from year to year the disadvantage is very serious unless it can be recognized that economy of operations brought about by a company shall result in increased earnings, perhaps an increased profit rate sufficient to overcome the apparent objection.

In the case of the first use of the method, there is no more objection, no more disadvantage, than there is to the commonly employed method which also allows operating expense as one of the items to be earned.

The method seems to be peculiarly applicable to the railroad situation in that its use would seem to do for transportation what has already been done for the use of money, namely, fix the worth of the service for a large district and then permit the companies operating within that district to earn whatever rates of return or profit they may be able to earn, while charging no more than the worth of the service, possibly sometimes charging less.

The procedure would be to determine: (1) the district within which rates should be uniform; (2) the total investment in all properties within that district and the average interest rate paid on outstanding obligations; (3) the total cost of operation within the district, including, if desirable, the depreciation allowance; then with these quantities determine the interest item of cost by multiplying the total estimated investment, not cost of reproduction, by the weighted average rate paid on outstanding obligations; add this interest and the cost of operation, including depreciation allowance, and find a proper profit on this total cost. Thus will be determined by summing these several items the total earnings for the district.

The process then of determining rates would be more or less complicated, but no more complicated than now. The various ton mileages of the various commodities and the passenger mileage would have to be found, and judgment rates fixed for the several classes of service, and adjusted until the application of these rates to the various services, respectively, will produce the necessary gross earnings.

Thus with the value of various kinds of service in a given district determined, and the rates fixed, those roads of superior location and management will presumably earn more than the estimated average profit, and should earn more; those roads of inferior location and inferior management—the two not necessarily going together—would presumably earn less than the average profit rate and should earn less. Thus will apparent justice be done and ordinary business conditions be established for railroad rate-making as nearly as is practicable with any regulated property.

In the working out of the foregoing suggestions, the matter of primary importance is to determine the fair profit rate to be allowed as a maximum, and, if value is wanted, the fair rate of return; and there is a relation between these two, the profit rate and the fair rate of return; not necessarily a definite relation, but it is probable that the profit rate should always be considerably more than the fair rate of return.

It is believed that a proper and intelligent application of the suggestion made above will result in the substitution of logical and defensible processes in rate making and in valuation for what now appear to be absurd and defenseless methods.

THE VANADIUM CORPORATION OF AMERICA, 120 Broadway, New York, recently completed work on a narrow gage railroad for carrying ore and mine supplies from its mines at Minas Ragra, Peru, to Lake Pun Run, about 6 miles. Contracts have been let to the Foundation Company, New York, to build a second railroad from Lake Pun Run to Ricran, which is on the Cerro de Pasco Railroad; it will be about 12 miles long. On the completion of this work the company will have a through rail and water route from its mines to the seaboard. This will do away with the use of llama pack trains in transporting its ore. The company expects to have the new line completed and in operation the latter part of this year.

Report of Electric Railway Commission

SWEEPING REFORMS in the electric railway industry, designed to restore public confidence and vitally needed credit, are recommended in a unanimous report made by the Federal Electric Railways Commission to President Wilson. The commission has been investigating the condition of the industry for more than a year, during which time it has covered the field thoroughly by hearing 95 witnesses and examining hundreds of reports and answers to questionnaires. Outstanding among the recommendations is that for the installation of the service-at-cost plan of operation. This plan, now operative in Cleveland, Cincinnati, Dallas, Montreal and other cities, will, it is believed, remove the industry from the field of speculative gain, furnish rides at the lowest possible cost and restore credit and public confidence. Primarily, the plan provides for furnishing rides at actual cost, which shall govern the rate of fares, and for protecting the investor by guaranteeing a fixed return on an agreed valuation of his holdings.

"We strongly recommend the principles of the service-at-cost contract, not as the only solution, but as one means of solving a very difficult problem," the report declares. "The controlling element in its favor is the restoration of public confidence in the corporation due to the removal of those elements of friction which have so frequently engaged the attention of the public. It might also be said that to a certain extent it removes the railways from the idea of speculative gain and places them on a common-sense business basis where the people pay for the service they get and where the opportunity for large profits no longer exists, since economies and lower operating costs are reflected in reduced charges for service. When the contract once is established, the opportunity for municipal corruption is reduced to the minimum."

Chaos faces the industry unless credit is restored and cooperation between public, managements and employees established, the report insists, and no words are minced in telling the three parties to the situation where their respective duties lie. Managements are advised that their primary duty is to serve the public with the highest efficiency at the lowest cost, with their cards face upward on the table, and not to use the industry as a means of obtaining profits beyond what may be necessary for upkeep, to pay a fair return upon the agreed value of the property and to secure the investment of funds further required. The public duty is declared to be the supervision and control of railway properties, with the view of safeguarding the public interest, and the allowance of such return upon the fair valuation of the property as may be agreed upon in the contract between the city and the company. By reason of such supervision the future attitude of the public should be one of friendliness and co-operation. Employees, it is said, should have a living wage and humane hours of labor and working conditions and a right to deal collectively with their employers, through committees or representatives of their own selection, but it is added that "all labor disputes should be settled voluntarily or by arbitration and the award of such board should be final and binding on both parties."

Other important declarations of the report are:

That public ownership and operation, generally speaking, are undesirable unless the results under private operation prove unsatisfactory, but the right of the public to own and operate all public utilities should be recognized and legal obstacles in the way of its exercise should be removed; that extensions into outlying territory benefiting private property should be paid for by assessments on such property in proportion to the benefits received, and that the cost of such extensions should not be added to the valuation of the railroad property upon which a fair return is to be allowed; and that franchises should fix no limit as to the time they shall run nor the fares that may be charged.

As to the present condition of the street railway industry, the commission finds that its financial credit has been lost and that in many localities it is not properly performing its public function. This is considered to be due to increased costs of labor and material, overcapitalization and financial mismanagement, public distrust and antagonism, failure of the fixed five-cent fare to meet existing conditions, extensions into unprofitable territory in furtherance of real estate speculation, and failure of employers and employees to properly co-operate; hence the physical impossibility of giving the necessary assurance of security to investors.

The report estimates that from $175,000,000 to $200,000,000 annually will be required to properly carry out the future needs of the industry and it emphatically declares restoration of public confidence is one of the vital necessities of restored credit.

As to the relative merits of public and private ownership and operation, the report says: "We are unanimously of the opinion that, under existing conditions, private ownership and operation is preferable to public ownership and operation."

The commission makes no recommendation of any fixed valuation plan, but it emphasizes the importance of determining by arbitration or otherwise the fair value of the railway property "as the basis for the financial return of the company," and also as the basis upon which it may, if desired, be taken over by the municipality. "The public," it adds, "should know what it is paying for and this question can not be settled without knowing what the property is worth." It is recommended that communities wishing to adopt the service-at-cost plan study the practice and records of the Interstate Commerce Commission on the subject of railway valuation.

One of the most striking features of this report is that it is unanimous, indicating an agreeement among men whose interests are so divergent as to cause the belief that they would not be able to agree upon the issues involved. The chairman, Charles E. Elmquist, was at the time of his appointment president of the National Association of Railway & Utilities Commissioners; the vice-chairman, Edwin E. Sweet, is assistant secretary of the Department of Commerce and has served as mayor of Grand Rapids, Mich.; George L. Baker is the present mayor of Portland, Oregon; Philip H. Gadsden is president of the Charleston, S. C., Consolidated Railway and Lighting Co., and he represented the American Electric Railways Association; William D. Mahon is the president of the Amalgamated Association of Street and Electric Railway Employees of America, and Charles W. Beall, a New York banker, represented capital investors. Dr. Royal Meeker, commissioner of labor statistics, was appointed as the representative of the Department of Labor, and Louis B. Wehle represented the Treasury Department.

FORTY-NINE RAILROAD REGULATORS AGAIN.—There are constitutional ways by which Congress can put the states out of business as disorganizing and injurious meddlers with the country's unified common carriers, and they will be employed if the states do not show more team-work with the federal commission in this matter. —*The N. Y. World.*

AN EFFECTIVE REMEDY.—The increase in freight rates allowed by the government would amount to almost seven cents on a lady's cloak shipped from New York. But that seven cents as it is passed down the line will furnish somebody an excuse for marking up the price of the garment about $70. When an excuse is wanted, a mighty thin one will do. When a merchant mentions the freight rate as a warrant for a price boost, hit him on the head with a hammer.—*Los Angeles Times.*

Improved Water Indicating Devices Necessary

Tests Demonstrate Unreliability of Many Water Indicating Appliances on Modern Locomotives*

THE DEVELOPMENT of the locomotive has created new difficulties in design, construction, maintenance and operation. One of the perplexing problems which has presented itself is that of securing a correct indication of the height of water over the crown sheet under all conditions of service. The grave importance of this matter is evidenced by the number of crown sheets damaged, due to low water, where careful investigation fails to disclose any contributory cause.

In the locomotive boiler, which usually has a sloping back head and is generally equipped with arch tubes and brick arch, the heat severely impinges on the door sheet and back end of the crown sheet, creating severe agitation and rapid circulation up the back head and through the arch tubes. The water glasses and gage cocks, as generally applied, only indicate a corresponding level of water while the locomotive is at rest and with no steam escaping, but when the safety valves lift or with the throttle valve open and the locomotive in operation the gage cocks, when applied directly in the boiler, indicate a higher level of water than do the water glasses when they are properly applied and maintained.

Realizing that this variation creates an unsafe condition and that its cause should be determined and a remedy applied the Bureau of Locomotive Inspection of the Interstate Commerce Commission has recently completed a series of tests with different devices on a number of locomotives of different classes, on 14 railroads in various sections of the country, for the purpose of determining the action of the water in the boiler and its effect upon the gage cocks and water glasses.

Preliminary Tests

The locomotives on which the first series of tests was made were of the 2-8-8-2 Mallet compound type, used in bad-water districts, equipped with boilers of the crown bar type, with wide fireboxes and Schmidt superheaters, and using oil for fuel. The devices for indicating the water level consisted of three gage cocks spaced 3 in. apart, and applied directly in the back head near the knuckle, at right angles to the sloping sheet, and one water glass with bottom connection entering the back head approximately 3 in. below the back end of the crown sheet, and the top connection entering the back head 2 in. below the knuckle. The lowest reading of the water glass and gage cocks was 3⅝ in. above the highest part of the crown sheet.

The back heads of these boilers were braced by a "T" iron, extending crosswise, at approximately the same level as the back end of the crown sheet.

In order to determine the action of the water as indicated by these appliances, observations were made during five trips in freight service, covering a distance of 680 miles, under varying operating conditions and on varying gradients. With the locomotive on straight track and no indication of foaming, water would issue from the top gage cock when it was opened, both while standing and in operation, while the safety valves were open or the throttle valve open, regardless of the water level in the boiler as registered by the water glass.

At the completion of the fifth trip, three additional gage cocks were applied in the back head, parallel with the horizontal center line of the boiler, the top one entering the back head 10½ in. below the top knuckle and 10½ in. to the right of the vertical center line, with the same vertical reading as the standard application. These were applied for the purpose of determining the effect of changing their location toward the vertical center line of the back head and away from the knuckle, where the upward circulation of the water was believed to be greater than near the center of the back head.

An experimental water glass was also applied on the left side of the boiler, opposite the back flue sheet, the top connection of which entered the wrapper sheet on the top center line, 15 in. back from the throttle dome, while the bottom connection entered the wrapper sheet on the side. The lowest reading of this glass was 1 inch above the highest part of the crown sheet. This glass will be referred to as the "experimental water glass."

With this arrangement, observations were made during five additional trips, when the same conditions were found to exist that had been noted in the previous tests, with respect to the original gage cocks, namely, full water showed at the top gage cock, regardless of the level indicated by the water glasses, while the experimental gage cocks indicated a level approaching that indicated by the water glasses while operating with open throttle or safety valves blowing.

While operating with throttle wide open and water glass three-fourths full, the bottom connections to both water glasses were frequently closed and drain valves opened, when dry steam would steadily flow through the experimental water glass and solid water would flow through the original water glass, which glass also showed the water in severe agitation while the locomotive was in operation. These experiments demonstrated that the level of water indicated by the gage cocks and water glasses varied with their point of connection with the boiler, and indicated that a higher level of water prevailed at the back head than existed further ahead.

It is believed that the transverse "T" iron which was applied to the back heads of these boilers, hindered the movement of water up the back head near the center, and consequently decreased the variation between the level of water indicated by the experimental gage cocks and that registered by the water glass.

As a result of these experiments, which were brought about by the large number of crown sheets being damaged and fusible plugs being melted, the gage cocks and water glasses were moved toward the vertical center line of the boiler, which seems to have relieved the situation to a considerable extent.

Second Series of Tests

It having been concluded that the false registration of the gage cocks, when screwed directly in the boiler back head, and the agitation of the water in the water glass when top connection is made near the knuckle, were due to the rapid circulation of the water upward, carrying it a considerable distance above the level further ahead; a number of locomotives were equipped with water columns, as shown by Fig. 1:

These locomotives were of the Santa Fe, or 2-10-2 type, equipped with Schmidt superheaters, Street stokers, used bituminous coal for fuel, carried 180 lb. steam pressure, with firebox 132 in. long and 96 in. wide, with brick arch

*This account of recent government tests is abstracted from a report prepared by A. G. Pack, chief inspector of the Bureau of Locomotive Inspection, Interstate Commerce Commission. The full text of the report will appear in the Railway Mechanical Engineer for September.

supported by four arch tubes and back head sloping 15 deg. from the vertical.

By this arrangement, it was believed that when entering the boiler far enough ahead of the back knuckle to obtain dry steam at all times through the top connection to the column, and by taking water from well below the crown sheet and below the agitated portion of water which was believed to exist near the back end of the crown sheet and back head, a more correct reading could be obtained than when the gage cocks were screwed directly in the boiler head. During an approximate six-month period, however, that these locomotives were operated with this arrangement, very considerable trouble was encountered, due to the extremely erratic and unreliable action of the water indications.

Tests which were subsequently conducted to determine the cause of the irregular indications developed the fact that these were occasioned by the lowering of water in the column due to the volume of dead water contained in the long pipe through which the bottom connection to the column was made and which was evidently due to the density and weight of the water at different temperatures, the temperature being much lower than that of the water in the boiler, due to the pipe and column being exposed to the cold atmosphere without circulation.

Actual Water Conditions Determined

Subsequent tests were conducted for the purpose of determining, if possible, the general outline of the flow of water which evidently existed at the back head when high evaporation was taking place.

To further determine the approximate outline and proportions of the water conditions existing at the back boiler head, while the locomotive is being operated with heavy throttle or when steam is being rapidly generated and simultaneously escaping from the boiler, tests were made with appliances shown in Fig. 2, covering a distance of 808 miles, in bad-water districts, on approximately level track and while handling regular tonnage.

The locomotive on which these tests were made was of the heavy 2-8-2 type, equipped with superheater and Duplex stoker, using bituminous coal for fuel. The boiler had a sloping back head, with firebox equipped with brick arch supported by four 3-in. arch tubes, the brick arch extending to within 52 in. of the door sheet and 30 in. of the crown sheet.

The water-indicating apparatus consisted of four gage cocks applied directly in the back head near the knuckle, one water column to which three gage cocks and one water glass were attached, one water glass with a 9-in. reading, standard application, with both top and bottom cocks entering boiler back head direct, one water glass applied for experimental purposes with the bottom cock entering the boiler head direct and with one top connection entering the boiler head on back knuckle and one entering 13 in. ahead of the back knuckle, and four exploration tubes or sliding gage cocks.

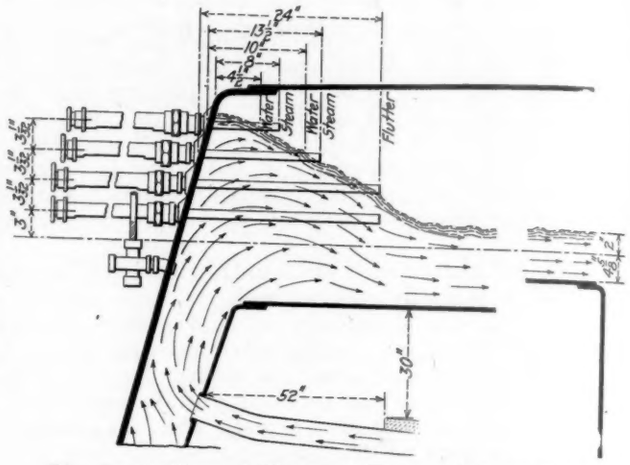


Fig. 2. Outline of Water as Determined by Tests

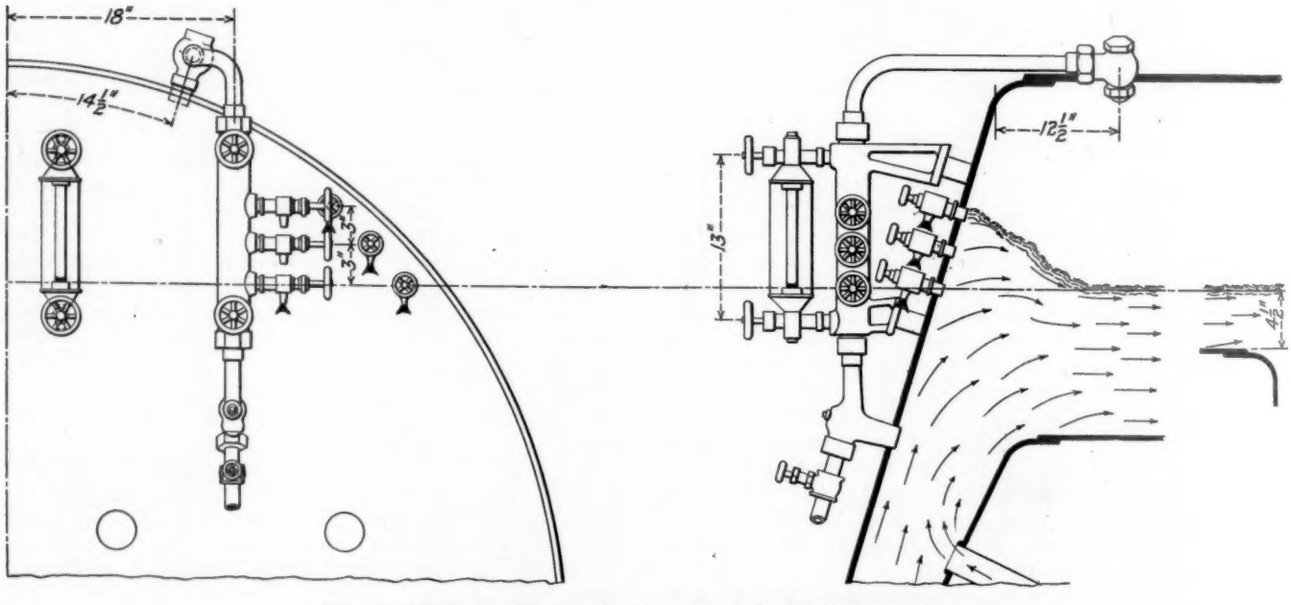


Fig. 1. Water Indicating Devices Used in Preliminary Tests

Fig. 2 shows a side elevation of these exploration tubes or sliding gage cocks entering the back head parallel to the horizontal axis of the boiler through suitable stuffing boxes, with a vertical pitch of 3½ in., giving a total vertical reading of 10½ in., with a horizontal adjustment of 24 in. Gradations were marked on these tubes so that accurate readings could be taken and recorded. The lower one of these tubes entered the boiler head on a level with No. 2 gage cock. The lowest reading of all water glasses

and gage cocks was 4⅝ in. above the highest point of the crown sheet.

It will be noted from Fig. 2 that while tube No. 1 was submerged, tube No. 2 showed a flutter of steam and water at an adjustment of 24 in.; tube No. 3 showed water at an adjustment of 10 in. and steam at 13½ in.; tube No. 4 showed water at an adjustment of 4½ in. and steam at 8 in. These readings were taken while the experimental water glass and water glass attached to the water column registered 2 in. of water, and the gage cocks attached to the water column showed one gage, while the four gage cocks applied in the back head registered full.

The water in the territory where these tests were made is very light and foams badly when compound is not used. About 110 readings were taken with these tubes or sliding gage cocks and other appurtenances used to register the water level. It is impossible to outline this flow of water accurately, as it changes with the operating conditions and the condition of the water in the boiler; but it is believed that this serves to illustrate the general condition which prevails to a greater or less extent in all locomotive boilers, especially those equipped with brick arch and arch tubes, while the locomotive is working heavy throttle or steam is rapidly escaping from the boiler.

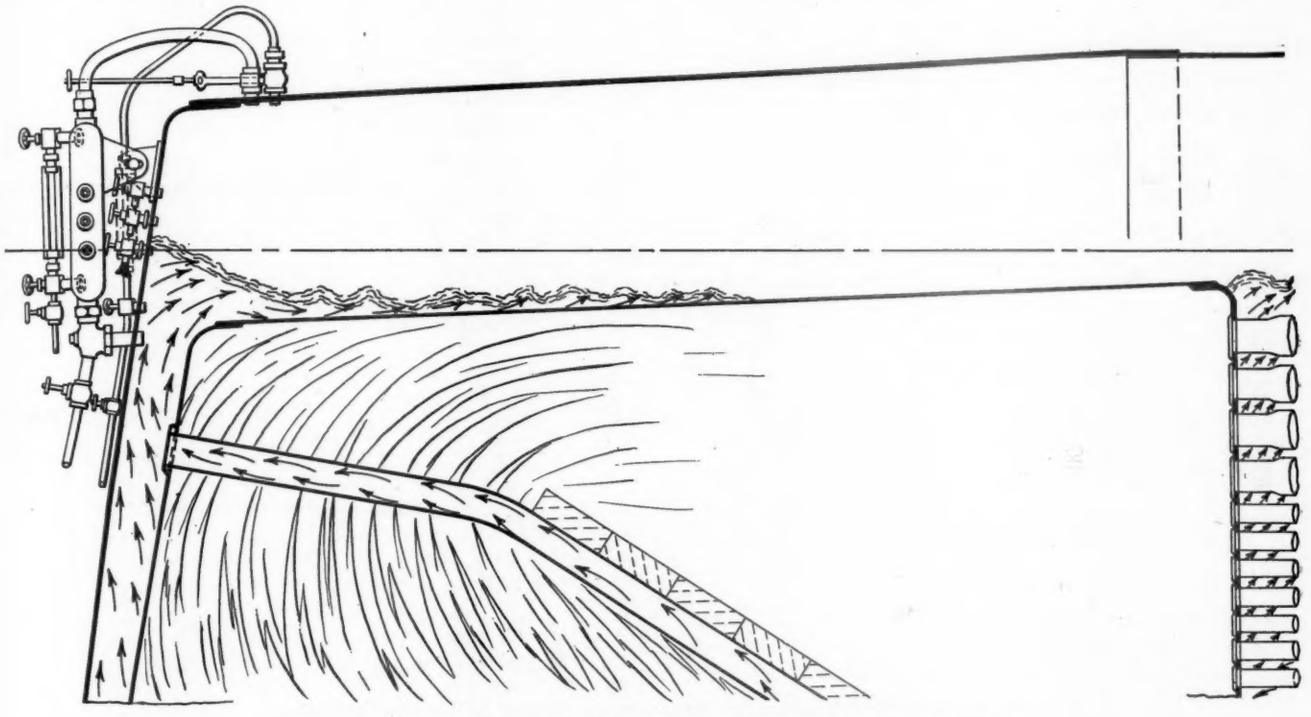


Fig. 3. Dangerous Condition Due to False Registration of Gage Cocks

Observations Made with Light in Boiler

Tests were made on a comparatively small locomotive, used in switching service, equipped with a wagon-top, radial-stayed boiler, having narrow OG firebox and vertical back head, the diameter of the largest course being 59 in. The special feature which should be borne in mind is that no arch or arch tubes were used in this boiler and that the back head was vertical. So that the action of the water could be observed, a glass tube was inserted in the top of the wrapper sheet which permitted the use of an electric light inside the boiler, which clearly illuminated the steam space over the crown sheet. Five bulleye sight glasses were applied over the back end of crown sheet, two over the front of crown sheet and three in the vertical back head, so that the action of the water in this part of the boiler could be seen while under steam pressure.

Both main rods were disconnected, crossheads blocked at the end of the stroke and the valve stems disconnected and so placed that steam was discharged through the exhaust nozzle and stack, creating a forced draft on the fire, representing operating conditions as nearly as possible. When the throttle was closed and no steam was escaping from the boiler, the surface of the water was approximately level, with a distinct circulation noted from back to front and from the sides toward the center of the crown sheet. When the safety valves lifted, the water rose with fountain effect, around the edges of the firebox, from 1 to 2 in., and the circulation was materially increased. When the throttle was opened and steam was being generated and escaping from the boiler in greater volume, the level of water throughout the boiler was seen to rise 1 to 1½ in., which rise was registered by the water glass, and a marked flow of water, with fountain effect, was observed rising around the firebox at the back head and wrapper sheets, reaching a height above that over the remaining portion of the crown sheet of approximately 2 to 4 in., in proportion to the amount of steam being generated and simultaneously escaping from the boiler.

The important feature to be noted is that this height of water, as seen at the back head, was approximately 4 in. at its maximum, and was registered by the gage cocks, while at the same time it could be seen that the water glass was registering the level further ahead over the crown sheet. These observations establish beyond question that when steam is being generated and is escaping there is an upward movement of water at the back head of the locomotive boiler which carries it above that further ahead over the crown sheet, and that the gage cocks, when applied directly in the boiler, register this rise of water and do not indicate the level further ahead, while the water glass registers the level of water further ahead and not the fountain of water at the back head.

Since a difference of 4 in. was observed between the

height of water at the back head and that further ahead in this boiler, which had a vertical back head and OG type firebox and was not equipped with brick arch or arch tubes, there can be little question but that in the modern locomotive boiler, which has a sloping back head and is equipped with brick arch and arch tubes, this difference between the height of the water at the back head and further ahead over the crown sheet must be materially increased.

General Conclusions

The feed water which enters near the front end is much lower in temperature than that in the boiler, which, due to its density and weight, naturally lowers and moves toward the firebox sheets where the greatest evaporation takes place. As the water is heated it rises, due to its decreased weight, influenced by the steam bubbles rising to the surface where they explode. This circulation causes a movement of water from front to back in the lower portion of the boiler, and upward around the firebox, and from back to front in the upper portion. This circulation unquestionably takes place with sufficient rapidity to carry the water in the boiler around the firebox sheets above the general water level, due to the limited space in the water legs, where the greatest amount of heat is applied.

Fig. 3 illustrates a condition which may exist where the water glass registration is ignored and the gage cocks applied in the boiler are depended upon to register the correct level. Since practically all enginemen have been taught to rely on the gage cocks in preference to the water glass, this is an especially unsafe condition, and is, no doubt, the cause of many damaged crown sheets.

It is recognized that the volume of water in the boiler increases in proportion to the amount of steam being generated and in the same ratio that the steam bubbles below the surface are formed and expanded, the volume of which depends to a very considerable extent upon the purity of the water in the boiler and its ability to the release steam generated, consequently increasing the height of water in the same proportion, which height is registered by the water glass.

Improved Arrangement Recommended

Since it has been established that gage cocks screwed directly in the boiler do not correctly indicate the general water level, the question arises to what would be a proper appliance. After careful investigation and tests, it is believed that Fig. 4 illustrates a water column that will afford the safest and most practicable method yet disclosed for accurately indicating the general water level in the boiler under all conditions of service. This arrangement has been recommended by the Bureau of Locomotive Inspection and was adopted as recommended practice by the Committee on Standards, of the U. S. Railroad Administration, at its February, 1920, meeting.

The larger connection to the top of the column, and restricted openings in the gage cocks, which should be not more than ¼ in. in diameter, are suggested for the purpose of preventing the water from being raised when the gage cock is opened wide; the object being to compensate for the lowering pressure in the column through the larger top connection, the area of the smallest opening of which should be not less than 1½ in. copper pipe, or preferably larger. Very recent tests indicate that to avoid the possibility of inaccurate readings, due to raising the water in the column when the gage cocks are opened excessively wide, the inside diameter of the column may be made 3½ in. and that of the top connection 2 in.

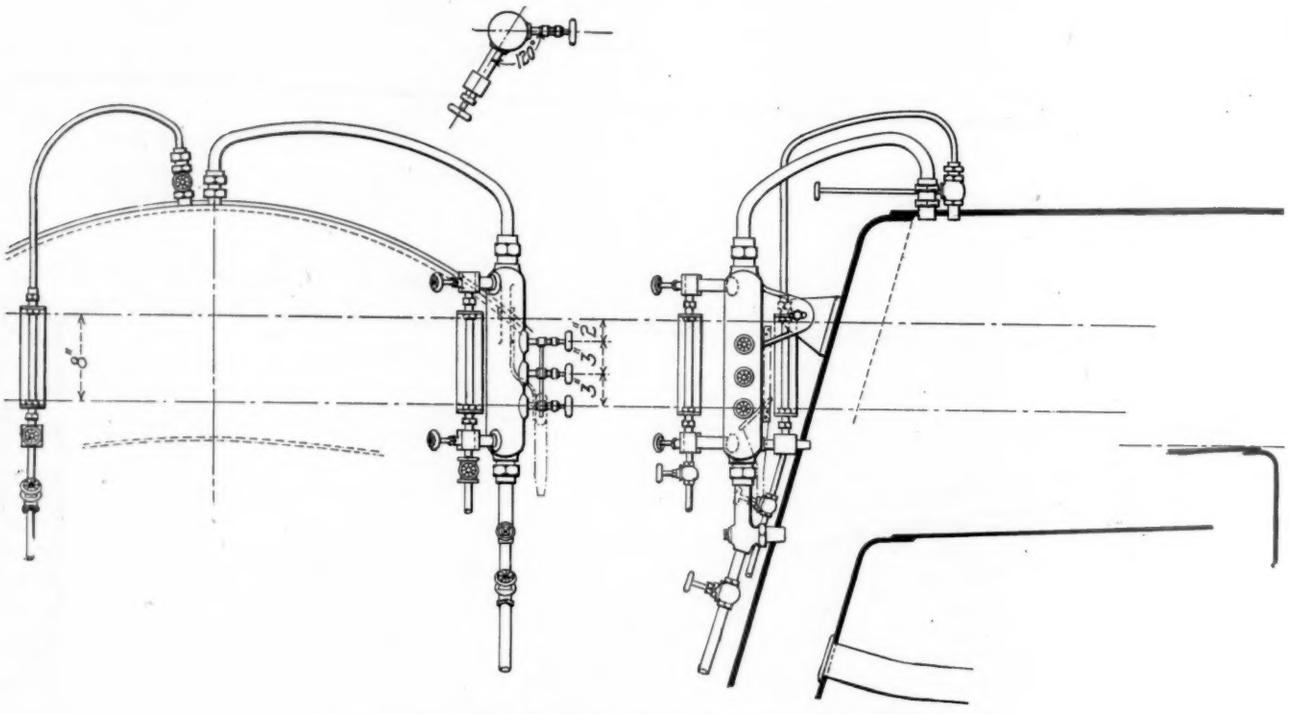


Fig. 4. Recommended Arrangement of Water Indicating Devices

It is recommended that the bottom water glass cock and bottom connection to the water column enter the boiler horizontally, and that the water column and water glasses should stand vertical.

Steam-pipe connections to water columns and water glasses should be made as short as possible, so as to obtain a supply of dry steam at all times, and so arranged as to thoroughly drain and be free from short bends or any possibility of sags or traps. It has been definitely established that where traps or sags that will retain the water or condensation are permitted in the top connection to water glasses or water columns, the reading of the water is materially affected, causing a higher level to be indicated.

Passenger Fares Increased in Great Britain

New Adjustments Raise Ordinary Fares 75 Per Cent Above Pre-war Level and Season Tickets 50 Per Cent

THE RATES ADVISORY COMMITTEE of the Ministry of Transport has made an interim report giving its recommendation for a temporary increase in passenger fares which has been accepted and was made effective on August 5. The ordinary passenger rates have been increased 16⅔ per cent and the season tickets* 25 and 36 per cent above existing rates, or 75 per cent and 50 per cent, respectively, above the pre-war rates. This is part of a general increase in rates to wipe out a £54,500,000 ($270,000,000) deficit for the current year and is to be effective until July 31, 1921, when it is hoped that they will be reduced. In its endeavor to allocate a proportionate amount of this deficit to passenger traffic the committee after investigation determined that 40 per cent of it should come from passenger traffic revenue and 60 per cent from freight revenue. This was based on the fact that in 1913 the proportion of passenger revenue to freight revenue was 46 to 54 per cent and for the first four months of the present year 44 to 56 per cent.

In this report the committee stated that "the two cardinal rules which we conceive govern the fixing of rates and fares are (a) that except for some special reason of policy no rate or fare should be less than the cost to the railways of conveying the traffic and (b) that no rate or fare can be charged which is greater than the traffic will bear."

As regards the first rule, it was found impossible to discover from the representatives of the railway companies the relative cost of carrying freight and passengers, but figures furnished by the Ministry of Transport show that under present conditions the cost per mile of running a passenger train was ten shillings and ten pence ($2.70) and for running a freight train 18 shillings and 11 pence ($3.72) without any allowance in either case for interest on capital. The ratio of these costs is approximately 36 to 64, respectively, and it was thus deemed proper to treat the passenger fares on more favorable terms in comparison with the freight rates.

The railway companies in presenting their evidence before the committee recommended that the passenger fares be increased 100 per cent above the pre-war level, but the committee felt that, due to the development of other modes of travel such as trams, omnibuses, char-a-bancs, motor cars, etc., and further that such a large increase would tend to discourage travel on railways to the extent that the aggregate receipts would be impaired, such an increase was not justifiable. It was therefore decided to increase the ordinary fares 16⅔ per cent above existing fares, which had already been increased 50 per cent on January 1, 1917, thus making a total increase of 75 per cent over the pre-war rates. This last increase gives a rate of 1¾ pence equivalent to 3½ cents per mile for third class, with the second class approximately 50 per cent and first class 100 per cent greater than this.

In addition to ordinary fares the committee considered excursion rates, workmen's fares, season tickets and special tickets to shippers which are discussed under their respective headings below.

The committee did not make a statement as to the definite amount of revenue the present increases would bring to the companies and stated that a more definite statement would be made with their report on the increases in freight rates.

*Season tickets include those issued for monthly, two-monthly, three-monthly, half-yearly and yearly periods.

Excursion Fares

Before the war and up to March, 1915, the English railways issued excursion tickets, week-end tickets, tourists' tickets and other tickets at less than the ordinary rate, and there has been a strong demand on the part of the public for their re-institution. The committee concluded, however, after consultation with representatives of the railways that it was hardly the time now to re-establish these arrangements, due to the shortage of rolling stock, particularly locomotives. Evidence was presented on behalf of the railways to show that during 1919, 1,066,000,000 passengers were carried at ordinary fares as against 880,000,000 traveling at ordinary and excursion fares in 1913. However, after the report of the committee had been made public the demand for excursion fares was so great that the Minister of Transport decided to permit "Holiday day excursion" trains to operate on all railways with the exception of the Caledonian, Cambrian, Glasgow & South Western, Great Western, London & North Western, London & South Western and North British Railways under the following conditions:

(1) The tickets to be available for both the outward and return journey on the day of issue only, and by the scheduled trains only.

(2) The fare to be charged to be the single ordinary fare in operation for the time being for the double journey, fractions of 3 pence to be reckoned as 3 pence.

(3) No baggage to be allowed.

(4) The trips to be run during mid-week only and to be available to the public generally; they should be for purely holiday traffic, and only introduced from centres of population to holiday resorts.

It is believed that as conditions improve these excursion trains will be permitted to run on all roads.

Season Tickets

All the British railway companies issue season tickets, yearly, half-yearly, and quarterly and in many cases monthly, at rates which are based on the principle of the rate per mile decreasing as the distance increases, so that for short distances they sometimes amount to a weekly charge equal to six times the return fare; but for long distances the weekly charge is sometimes less than one return fare. The justification for the high ratio in the case of short distances appears that on an average each season ticket is used for three single journeys per day. To the railway companies this traffic is satisfactory even at the low fares, seeing that it is regular, and good trainloads are provided at hours which are well ascertained. When ordinary passenger fares were increased by 50 per cent on January 1, 1917, the object was to restrict unnecessary travel rather than to produce revenue, as previously stated, and no increase was then made in season ticket rates, but in May, 1918, the season ticket rates were increased, for distances under 12½ miles, by 10 per cent and for distances over 12½ miles by 20 per cent.

The fact that the rates for ordinary tickets were increased in a greater proportion than those for season tickets resulted in a substantial increase in the number of the latter, and it is recorded that in 1913 the number of season tickets issued on the British railways was 569,310, as against 901,082 in the year 1919. Representatives of season ticket holders urged that as the amounts paid for such tickets are in

most cases part of the necessary cost of living, no increase or only a small increase should be made in the rates. The committee however felt that at a time when all the costs of living have arisen there is no valid ground for excepting this item and throwing upon others the share in the increased expenses of operating the railways which is properly attributable to this class of traffic, and accordingly recommended and advised that the charges for season tickets be increased by 50 per cent over the charges in force before May, 1918.

Workmen's Fares

English railways for over 35 years operated what are known as workmen's trains in the early morning hours, between 6 and 8 o'clock, on which passengers were carried at exceedingly low rates. Examples of some of the lowest of these rates will serve to show how very cheap they were. The Great Eastern operated a train over a distance of 10¾ miles each way for a round-trip fare of 2 pence (4 cents) and the Great Western, a train over 18 miles each way for 8 pence (16 cents). Numerous other roads carried similar rates. There have been no standard rates for these workmen's fares; about 33 per cent of them were, before the war, a single third-class fare (1 penny—2 cents per mile) for a round trip. The committee felt that under the present circumstances, these fares should be substantially increased, particularly on account of the fact that workmen's wages have increased to such a great extent since the war. It was recommended therefore, and these recommendations have been carried out, that the following scale of charges should be made:

For any distance not exceeding 2 miles....	3	pence for the round trip
For distance between 2 and 2⅓ miles....	3½	pence for the round trip
For distance between 2⅓ and 2⅔ miles..	4	pence for the round trip
For distance between 2⅔ and 3 miles....	4½	pence for the round trip
For distance between 3 and 3⅓ miles....	5	pence for the round trip
For distance between 3⅓ and 3⅔ miles..	5½	pence for the round trip
For distance between 3⅔ and 4 miles....	6	pence for the round trip

For distances over four miles—6 pence for the first four miles and ½ pence for every half-mile over four miles.

Shippers' Concessions

There has long been a custom among the British railways of issuing to those shippers who send large yearly consignments of goods by rail, tickets for use by their employees at rates lower than ordinary season tickets. These tickets are not issued for distances less than 50 miles in England and 30 miles in Scotland. Before the war the amount of traffic consigned necessary to qualify a shipper to receive such a ticket was in Great Britain so much as would produce a sum of £300 ($1,500) in freight rates. This was increased during the war to £500 ($2,500) and when the rates were increased on January 15, 1920, the figure was increased to £750 ($3,750), representing approximately the same amount of traffic as was previously represented by £500. A shipper whose traffic represents double the qualification is entitled to two tickets and so on. The reduction allowed on these shippers' tickets is not uniform on the various British railways, but the following figures taken from a table supplied by the London & North Western may be taken as fairly representative:

	Percentage of traders' tickets below ordinary season tickets	
	First class	Third class
50 miles	45	39
100 miles	37	32
150 miles	35	33
200 miles	37	37
300 miles	46	46
400 miles	51	51
500 miles	54	54
600 miles	56	51

When ordinary season tickets were advanced 20 per cent the rates for shippers' tickets were advanced in the same proportion. The committee considers that there is no good reason for continuing such large concessions to shippers doing a large business and recommend that in future no greater reduction should be made on shippers' tickets as compared with the ordinary season tickets than 20 per cent. They also advise that when the rates for carriage of freight are increased, as is now proposed, the amount of traffic necessary to qualify for the issue of a shipper's ticket should be increased so as to be traffic producing freight rates to the amount of £1,000 ($5,000).

Junior Workers' Fares

Prior to the war, season tickets were issued at half the ordinary rates to children under 15 years of age, and to pupils, teachers, scholars, student and medical students, art students, apprentices, and articled clerks who were learning a trade or a profession, and also to junior clerks and messengers up to the age, in each case, of 18 years. As from April 1, 1920, season tickets have been issued at half the ordinary rate for residential purposes only, to all applicants under 16 years of age and to scholars, students, and apprentices, including articled clerks, and articled pupils (not in receipt of salary, wages, or any monetary allowance whatsoever), under the age of 18 years.

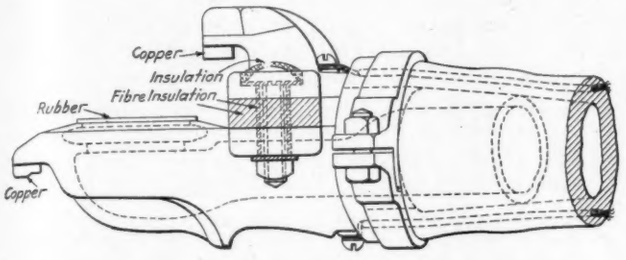
The committee is of opinion that the latter practice should be continued but, if the charge for season tickets is increased, recommend and advise that the benefit of season tickets at half the ordinary rate should be extended to the classes above-named who are in receipt of nominal salary, wages or remuneration, which for this purpose should be taken to mean not more than 18 shillings ($4.50) per week, the other conditions attached to the issue of such tickets at the present time being maintained.

From the Cincinnati Commercial

Everybody's Been so Busy Administering Discipline, They Forgot to Feed Him

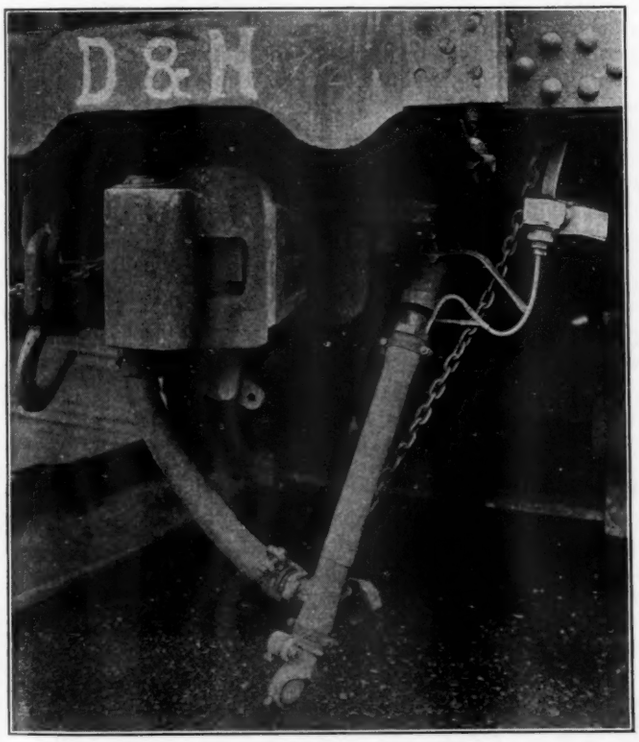
United States Electric Train Signal

THE DELAWARE & HUDSON COMPANY has in use on a local passenger train an electric signal, taking the place of the usual air signal, and it has been tested for over a year. It is giving satisfactory service; the train circuit is normally closed, so that any failure of battery or wires would be at once revealed. The electric apparatus, an electro-magnetic valve, sounds a whistle. There is a



Arrangement of Wiring in Hose and Coupling

whistle, with a miniature semaphore, not only on the engine, but also one in each car of the train, and all signals are audible and visible throughout the train. The whistle on the locomotive is loud enough to be heard readily above any conflicting noise. With this arrangement each signal given to the engine is repeated in each car; and it is possible, with a suitable code, for the engineman to signal to the conductor



Electrical Connections for Trains. Signals Are Made Through Hose and Coupling

at any time. Signals are, of course, communicated instantaneously. The train circuit is energized by gravity batteries 4-volt—one in each car. There is no battery on the locomotive.

The train is made up of a locomotive and four cars and runs between Troy, N. Y., and Rutland, Vt., 86 miles, six round trips a week. The circuit controller in each car is actuated by the usual cord extending the length of the car. Air is taken from the brake system train line.

The connection between the cars is by means of insulated wire in the brake hose coupling, and the man who couples the air hose by the same operation completes the electrical connection. The couplings are insulated as shown in the smaller illustration.

The electrical connection through the hose is said to be as effective as a separate connection could be, and its cost is less. This installation was in use throughout last winter and there was no trouble from ice or snow.

The experiment on this short train has illustrated the advantage and practicability of such a signal on freight trains; and except for the difficulty incident to using foreign cars, the system could be adapted to the longest train. It would be available also for telephone communication between the locomotive and the caboose. Extensive experiments, continuing through the winter, were made, also, two or three years ago, on the Canadian Pacific and the Canadian National.

The proprietor of this system is the United States Train Signal Company, 97 Exchange street, Portland, Me., and it is patented by William E. Benn and George E. Davies.

The apparatus on the Delaware & Hudson train was inspected and tested last June by the Bureau of Safety of the Interstate Commerce Commission. W. P. Borland, chief of the bureau, reporting on this test says that "the device is designed upon sound principles, and if properly installed and maintained it is capable of producing reliable train signal indications."

Efforts to Prevent Coal Accumulation at Tidewater

WASHINGTON, D. C.

FOR THE PURPOSE of reducing the detention and accumulation of cars of bituminous coal awaiting transshipment at tidewater terminals, and thereby reducing the number of cars required for the tidewater coal traffic, representatives of the railroads and of the coal operators have agreed upon a plan of embargoing such traffic except upon permits to be issued by the terminal railroads. The Interstate Commerce Commission has issued order after order to promote the shipment of coal to tidewater for New England and to the lake ports for the Northwest and recently the railroads have been able to transport the required tonnages of coal to those points, but it has been ascertained that this does not always get it to the desired destination, partly for the reason, it is said, that the would-be consumers of the coal are not always willing to pay the prices asked by the owners of it and partly because of a scarcity of boats to complete the journey started by the railroads, with the result that the entire situation plays into the hands of coal speculators.

Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, and Col. D. B. Wentz, president of the National Coal Association, held a conference on this subject on August 18 with representatives of the Commission on Car Service, the National Coal Association, the tidewater coal-carrying lines serving the ports Hampton Roads and north, representatives of the tidewater coal exchanges, and the president of the American Wholesale Coal Association, to consider what more efffective means could be adopted to reduce the accumulation of cars to a minimum.

According to a statement issued by the Commission on Car Service, the conference considered particularly a report of the special committee of the National Coal Association in the matter of shipment of tidewater bituminous coal,

and unanimously reached the conclusion that such changes should be made in the regulations of the Tidewater Coal Exchange which handles shipments through New York, Philadelphia and Baltimore, as would result in penalizing the holding of bituminous coal by individual members of the exchange beyond the free time permitted in established tidewater coal demurrage tariffs. Further than this, the meeting unanimously agreed that, as the only effective means of adequately controlling the situation, all tidewater coal-carrying lines should immediately embargo the movement of tidewater coal and simultaneously provide for the acceptance of such traffic only upon permits to be issued by the tidewater bituminous coal terminal railroads. It was recognized that the issue of the permits must depend in the first instance upon transportation conditions upon the railroads concerned, but beyond this it was unanimously agreed that no permits should be granted except upon a definite showing that the coal upon arrival at the pier at tidewater would be unloaded into vessels with reasonable promptness, this ability on the part of the committee to be ascertained by his showing as to vessels under charter and his record in meeting the conditions of permits heretofore issued. The meeting also agreed, without dissent, that the issue of permits should be to the loading mines with provision made that if the amount to be loaded was exceeded, the mine so violating the permit would be penalized in its car supply so long as the coal so billed without permit remained unconsigned elsewhere and undisposed of.

The purpose of the arrangement is to prevent unnecessary delay to equipment and to promote transportation, and these recommendations are to be utilized with that in mind.

Officials of the National Coal Association issued a statement that representatives of the coal industry have joined the railways in formulating these changes "in the conviction that such action will be instrumental in checking harmful speculation in tidewater bituminous coal," and because, in their belief, it will prevent the misuse of railway equipment for speculative purposes. At the same time they are confident that these restrictions upon the shipment of coal to tidewater will not interfere with the efficient conduct of the tidewater coal business, but will facilitate it through an improvement in transportation conditions.

I. C. C. to Investigate State Rates

WASHINGTON, D. C.

THE QUESTION as to whether state railroad commissions and state passenger fare laws are to be allowed to nullify in part the effect of the Interstate Commerce Commission's order allowing increases in interstate freight and passenger rates has been brought to a head by the Illinois situation. The Illinois roads have filed with the Interstate Commerce Commission a petition asking it to institute an investigation of the situation arising from the order of the Illinois Public Utilities Commission which prohibits the roads from increasing intrastate passenger fares but limits them to the two-cent state statutory fare, and allows an increase of only 33⅓ per cent in freight rates. The Interstate Commerce Commission on August 24 made public an order, dated August 18, which referred to the receipt of the Illinois petition, and ordered an investigation "to determine whether the rates, fares and charges required to be established by said orders made by the Public Utilities Commission of the State of Illinois, cause or will cause any undue or unreasonable advantage, preference or prejudice as between persons or localities in intrastate commerce on the one hand and interstate or foreign commerce on the other hand, or any undue, unreasonable or unjust discrimination against interstate or foreign commerce; and as to what rates, fares and charges, if any, or what maximum or minimum, or maximum and minimum shall be prescribed to be charged by the petitioners, in order to remove such advantage, preference, prejudice or discrimination, if any, as may be found to exist." The proceeding was assigned for a hearing before Commissioner McChord at Chicago on September 8 and the governor and the public utilities commission of the state were notified. This will bring about a test of the new powers conferred upon the federal commission by new transportation act.

The Illinois roads in their petition asked the commission, after an investigaion, to enter an order declaring discriminatory, unjust and unlawful any rate or rates required to be applied by any state authority to the transportation of freight and passengers within Illinois less than the percentages provided by the commission in its order in the general rate advance case, and requiring the establishment of the same level of rates on Illinois traffic as on interstate traffic.

The petition says that the Interstate Commerce Commission in its order did not determine merely that the increases prescribed should apply only to interstate traffic but that the increases allowed, if applied both to interstate and intrastate traffic, would yield no more than was necessary to permit the carriers to earn 6 per cent upon the value of their property.

As a practical matter, the petition asserts, it is desirable that intrastate rates in Illinois should be on the same basis in all parts of the state and it is necessary for the carriers to have the stated percentages in order that their net income may equal the amount provided in the transportation act. If they are not permitted to increase intrastate freight and passenger rates in Illinois by the amounts permitted as to interstate traffic the railroads in the groups in which Illinois is situated will fail to earn the amount of net income provided in the transportation act.

The Illinois commission allowed the freight rates to be increased by 33 1/3 per cent but had held that all passenger rates, including the surcharge for travel in Pullman cars, and commutation rates, may not be increased in any amount, having gone on record as being of the opinion that after September 1 the lawful rates in Illinois will not be greater than the two cents a mile rate prescribed by the Illinois law. Therefore, the carriers assert, no relief can be obtained from the Illinois commission and the result will be that unreasonable discriminations will be created as against interstate traffic, resulting in unreasonable preferences between persons and localities in intrastate traffic in Illinois on the one hand and interstate or foreign commerce on the other hand, which is forbidden by the interstate commerce act. Under the Illinois laws, the petition asserts, heavy penalties are imposed on any railroad company failing to comply with any order of the Illinois commission and unless prompt action is taken by the Interstate Commerce Commission the carriers will not be able to secure the revenue required by law and will be forced to collect and impose illegal and discriminatory charges.

THE ORGANIZATION OF THE PITTSBURGH SECTION of the American Welding Society was completed at a meeting held in the Chamber of Commerce auditorium at Pittsburgh, Pa., on August 12. Officers of the section elected at the meeting are: chairman, J. D. Conway, secretary and treasurer Railway Supply Manufacturers' Association; first vice-chairman, Dr. R. H. Brownlee, Brownlee Consulting Laboratories; second vice-chairman, H. H. Maxfield, general superintendent motive power, central region Pennsylvania System; temporary secretary, F. W. Tupper, American Welding Society; treasurer, F. O. Gardner, Pittsburgh Testing Laboratory.

Railroads Handling Larger Freight Tonnage

Review of Transportation Conditions—Accumulations Being Reduced and General Improvement Noted

More new freight was handled by the railroads during the week ending August 7 than during any previous week this year. The weekly report compiled by the Commission on Car Service shows a total of 942,150 cars of revenue freight loaded, as compared with 872,073 for the corresponding week of 1919 and 947,955 for 1918. The record for the week is therefore only about 5,000 cars below 1918, and three districts, the Southern, Central Western and the Southwestern, show records better than the corresponding week of 1918. The Southern has been doing better than 1918 for the past four weeks. The complete figures are reported in their present form only from the period since June 1 during which time the revenue freight loaded has ranged from 757,000 to 923,000 cars. The latter figure was attained during the week of July 17 and the next two weeks showed a slight falling off which is more than made up, however, by the increase for August 7. The table showing the freight loaded and received from connections is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS

This Year, Last Year, Two Years Ago. For Week Ended Saturday, August 7, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year.	Total revenue freight loaded: Corresponding year. 1919	Total revenue freight loaded: Corresponding year. 1918	Received from connections: This year.	Received from connections: Corresponding year. 1919	Received from connections: Corresponding year. 1918
Eastern	1920	6,706	2,594	52,331	3,919	8,489	10,136	35,280	105,445	224,900	....	....	265,187	....	....
	*1919	7,814	1,907	48,751	3,254	8,074	6,998	16,201	113,375	....	219,150	226,217	....	222,367	243,711
Allegheny	1920	2,812	2,975	61,092	5,380	3,880	11,611	37,211	68,737	193,698	....	....	140,559	....	....
	1919	3,928	2,658	56,120	3,106	4,112	14,634	41,358	70,418	....	169,334	210,162	....	138,303	179,332
Pocahontas	1920	213	214	25,121	653	1,923	193	2,813	7,057	38,187	....	....	20,862	....	....
	1919	332	151	18,476	553	1,752	183	107	8,055	....	29,609	39,601	....	15,486	14,773
Southern	1920	3,341	2,214	26,253	1,455	19,509	2,877	33,403	50,012	139,064	....	....	74,763	....	....
	1919	4,050	1,658	20,329	270	20,238	2,114	14,358	59,961	....	122,978	122,737	....	58,962	70,346
Northwestern	1920	7,883	6,809	10,351	1,437	17,255	45,678	28,363	39,097	156,878	....	....	55,302	....	....
	1919	9,807	5,243	6,851	988	17,304	23,408	19,774	40,465	....	123,840	164,964	....	49,311	68,651
Central Western	1920	11,128	9,056	17,184	452	6,009	3,259	31,855	48,669	127,612	....	....	68,910	....	....
	1919	13,141	9,471	18,545	305	6,054	3,585	23,071	50,461	....	124,663	124,655	....	65,479	64,624
Southwestern	1920	4,194	3,090	4,771	141	8,086	295	16,818	2,441	61,811	....	....	50,011	....	....
	1919	6,579	2,507	5,506	91	6,880	411	11,401	22,154	....	55,529	59,619	....	47,009	42,184
Total all roads	1920	36,277	26,952	197,103	13,437	65,151	74,049	185,748	343,433	942,150	....	....	675,594	....	....
	1919	45,651	23,595	174,578	8,567	64,414	51,333	128,270	364,889	....	872,073	....	....	596,917	....
	1918	....	....	....	....	....	....	....	....	....	....	947,955	....	....	683,621
Increase Compared	1919	....	3,357	22,525	4,870	737	22,716	57,478	....	70,077	....	....	78,677	....	....
Decrease Compared	1919	9,374	....	....	....	....	....	....	21,456	....	....	....	....	....	....
Increase Compared	1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Decrease Compared	1918	....	....	....	....	....	....	....	....	5,805	....	....	8,027	....	....

* Detail figures for 1919 for Michigan Central not given.

The freight car accumulations also continue to show reductions. For the week ending August 13 the total was 79,213, which is the lowest recorded this year. For the preceding week it was 84,949. The reduction includes a reduction of 2,100 in the number of cars held on account of the disability of consignees and also a considerable reduction in the cars held on account of embargoes.

The deferred car requisitions also show a reduction during the week ending August 6, after a slight increase during the preceding week. For the week ending August 1 the average daily shortage of cars was 132,000. For the week of August 6 it was 125,219 for the United States and Canada. For the United States alone it was 119,359, of which 38,564 were coal cars and 66,115 were box cars.

Per Cent of Home Cars on Home Roads

Some progress is being made although not of a very rapid rate, in "unscrambling" the freight cars that were so badly scattered during the period of federal control when cars were routed without regard to ownership. One of the items in the program recently undertaken by the railroad executives for improving the quantity and quality of transportation service was "more effective efforts to bring about the return of cars to the owner roads," and this has also been one of the objectives of the Commission on Car Service since the roads were relinquished on March 1. Regular reports on this point are received by the commission which indicates that on March 1, 1920, the percentage of home cars on home roads was less than ever before, or 21.9. On August 1 the percentage had been increased to 26.7. On May 1, 1917, the percentage of home cars on home roads was 52.8, which would indicate that on the average most cars spent most of their time on the rails of the home road or its direct connections. On January 1, 1918, when the roads were taken over by the government, 44 per cent of the cars were at home. The percentage kept decreasing during federal control and on January 1, 1919 was 26.6. It was further reduced during 1919, in spite of the fact that some efforts were made to increase it before the roads were returned. Since the return of the roads there has been a gradual increase except for a slight decrease during May. These percentages refer to all cars.

The box cars have been more widely scattered. On January 1, 1918, 24.8 per cent of the box cars were on home roads and on March 1, 1920 only 11.5 per cent were at home. On August 1 this had been increased, largely as a result of the relocation orders issued by the Interstate Commerce Commission and the Commission on Car Service, to 15.4 per cent. Of the gondola cars, 60.3 per cent were at home on January 1, 1918. This percentage also decreased during federal control, but was particularly reduced after the coal strike of last year, until on March 1, 1920, it was only 28.6. On August 1 it had been increased to 32.7. Of the stock cars, 53.6 were on home roads when the roads were taken over and only 27.2 per cent when they were returned. On August 1 this had been increased to 35.5 per cent. On January 1, 1918, 53.9 per cent of the flat cars were on home

roads. On March 1 31.9 were at home and on August 1 this had been increased to 34.9, although this represented a decrease as compared with July 1, when the percentage was 35.5.

A compilation of the reports for all cars from May 1, 1917, to August 1, 1920, by districts is as follows:

PERCENTAGE OF HOME CARS ON HOME ROADS BY DISTRICTS FOR CLASS I ROADS

Date	Eastern	Allegheny	Pocahontas	Southern	North West-ern	Central West-ern	South West-ern	Total
May 1, 1917.....	47 3	57.4	48.3	46.4	64.6	53.1	32.1	52.8
January 1, 1918....	36.4	51.6	49.7	38.7	53.8	45.5	32.2	44.0
January 1, 1919....	13.2	26.0	31.4	32.9	34.5	37.9	24.5	26.6
July 1, 1919.....	19.8	32.3	36.0	37.3	37.5	41.2	29.7	31.7
August 1, 1919....	20.3	33.0	33.5	34.4	37.4	39.9	28.6	31.2
September 1, 1919..	19.2	32.1	32.9	31.1	37.0	38.0	24.7	29.7
October 1, 1919....	18.7	29.7	28.3	27.4	35.8	36.0	24.4	27.9
November 1, 1919..	17.3	28.0	27.4	26.0	34.2	33.7	23.5	26.3
December 1, 1919...	16.3	25.8	21.4	26.7	33.4	33.7	23.8	25.3
January 1, 1920....	15.7	23.4	16.6	23.8	31.4	29.6	21.5	23.0
February 1, 1920...	15.3	23.1	18.9	21.7	30.5	28.0	20.6	28.3
March 1, 1920.....	14.6	23.8	17.7	19.6	29.8	28.8	20.5	21.9
April 1, 1920.....	16.9	26.9	20.0	21.5	30.5	30.7	23.4	24.1
May 1, 1920.....	18.1	29.7	26.2	22.2	32.2	32.3	23.5	25.9
June 1, 1920.....	17.8	28.2	25.1	22.8	35.8	30.4	23.7	25.7
July 1, 1920.....	17.7	27.4	28.8	21.2	37.7	32.2	23.1	26.0
July 15, 1920.....	18.1	27.6	27.5	21.2	38.4	30.9	23.1	26.0
August 1, 1920.....	18.1	27.8	29.4	22.1	39.7	32.8	23.5	26.7

Reports received by the Commission on Car Service from its local committees in 35 cities for last week reflect many instances of improvement in transportation conditions. Many of the committees report a normal situation as to switching service and labor conditions, although some of them say that the efficiency of labor is not yet up to normal. They also report vigorous efforts to reduce the number of bad order cars, which are showing results, and that facilities are being used to capacity, but in many sections there is a scarcity of labor for car repairs and in some places also of materials.

The various committees also report great activity and vigilance in the efforts to induce shippers and consignees to utilize cars to capacity and to load and unload promptly to avoid detention of cars. Regular daily checks are made and many of the committees take up each instance where cars are being detained with the shippers or consignees to ask them to release the car. They report a general spirit of co-operation in this campaign. The Kansas City committee handled 124 of such instances last week. The Cleveland committee devoted itself especially to the unloading of potatoes and other foodstuffs. It found 140 cars of potatoes being held on one road with little effort being made on the part of shippers to unload. This was taken up with the local commission merchants' organization with a statement that unless the cars were unloaded it would be necessary to embargo the consignees and most of the 140 cars were promptly disposed of. Officials of one railroad made a trip over a division interviewing the agents at each station and taking up each case of detention with the shippers. Those who had held inbound shipments an unreasonable time were embargoed. Shippers were asked not to ship for a time to consignees that already had on hand more material than they could unload. The Pennsylvania and Baltimore & Ohio have inaugurated a campaign to induce consignees to release equipment by working their unloading forces Saturday afternoons, nights and Sundays, pointing out that the railroads work 24 hours a day and 7 days a week. Consignees as a rule will not do this because of labor conditions and the expense involved. At Philadelphia 38 cars were unloaded by the Baltimore & Ohio and 186 by the Pennsylvania by railroad employees. At Columbus, Ohio, each road has designated one person to follow up the release of equipment on its rails within the terminal and reports are furnished to the local committee on car service and to the terminal traffic committee covering all cars held beyond the free time. Delays are handled by the committee direct with the consignees or consignors to secure prompt release. At New York 17 cars of l.c.l. freight were placed in public storage due to slow acceptance by consignees.

As the car supply improves greater opportunity is being afforded to carry out the recommendations of the Commission on Car Service as to the making up of solid train loads. Many committees report that it is no longer necessary to reroute freight but several instances are reported where freight that would be embargoed by one route has been diverted.

The Southern Railway car works at Gadsden, Ala., is repairing an average of 42 cars per week day. At Kansas City, 10,644 cars were repaired as compared with 11,956 the week before. The lines reporting to the Cleveland committee repaired 4,610 bad order loads and 7,105 empties, with only 78 per cent of the authorized repair forces working. At Louisville the bad order car situation showed a decrease during the week of 18 per cent in heavy repair cars and of 16 per cent in light repair cars. At Norfolk, 3,322 bad order cars were repaired during the week. At Columbus an average of 463 cars were repaired daily. At New York 757 bad order cars were repaired on Sunday.

Most of the committees report that it has not been necessary to place new embargoes during the week and good progress has been made in clearing terminals of cars held on account of embargoes elsewhere. In most cases it is reported that the car supply is short of the requirements, but some committees reported an adequate supply. At Cleveland, on August 20, there were on hand 17,356 cars of coal for lake ports and 3,856 cars were dumped the previous day. Efforts are being made to have more boats assigned to reduce the number of cars held at the ports. The reports showing stocks of railroad fuel coal on hand at various points showed that the supply is very low and in a few instances railroads have had to confiscate coal, in some cases to make up for coal that they had previously let industries have to keep them going.

The Interstate Commerce Commission has issued a partial advance summary of traffic statistics for the Class 1 roads for June and the first six months of 1920, which shows that roads operating 157,000 miles of line in June handled 24,819,695,000 ton-miles of freight as compared with 20,456,012,000 in June, 1919. For six months the total net ton-miles aggregated 136,194,000,000 as compared with 114,465,000,000 in the first half of 1919.

The Interstate Commerce Commission on August 19 issued a notice to the railroads saying that many roads have not complied with that part of Service Order 9 which requires a report of the number of cars placed at coal mines for public utility coal. The purpose of the notice is to request the railroads affected by Service Order 9 to furnish the commission with a statement of the cars heretofore assigned to coal mines for public utility coal, if they have not already done so and hereafter and during the life of Order 9 to see to it that a report of this character is sent to the commission each Saturday for the preceding week. The report should show the name and location of the mine to which the cars are assigned, how many cars were placed at such mine or mines and the name of the public utility to which the coal was consigned.

Because of a shortage of equipment and accumulation of cars at Galveston, the Interstate Commerce Commission on August 24 issued Service Order No. 13, authorizing the lines serving that city to remove from cars and place in storage at the cost of the owner so much of the grain now in cars upon tracks at Galveston as has not been removed within the free time and the cars so released are ordered restored to transportation service.

The commission on August 24 announced a hearing at Washington on August 30 on the application of the chambers of Commerce of Cleveland and Akron, Ohio, for a modification of Service Order No. 10, the order giving priority in the movement of lake coal to the northwest. Telegrams announcing the hearing were sent to the governors of Minnesota, and North and South Dakota.

General News Department

Shopmen on the Pennsylvania Railroad are taking a strike vote because of a report that the road intends to put piecework scales into effect on September 1.

Baggage transfer service to and from the railroad and steamship terminals in New York City ceased early this week because of a strike of the employees of the Westcott Express Company and the New York Transfer Company.

Two men held up the Missouri Pacific passenger train No. 5 running from St. Louis, Mo., to Little Rock, Ark., on the outskirts of St. Louis on the night of August 18, and escaped with four mail pouches believed to have contained registered mail.

Outlaw strikers are again causing trouble—this time at the Mott Haven and Oak Point yards of the New York, New Haven & Hartford in New York City. On the afternoon of August 22 several attacks were made on men leaving the yard and one man was seriously hurt. The assailants are believed to be former employees who quit their jobs during the outlaw strike.

The Texas Sectional Committee of the Signal Division of the American Railroad Association will hold a meeting at the Hotel Galvez, Galveston, Tex., on September 4. B. F. Hines of the Thomas A. Edison Company, Inc., will present a paper on electric lighting of signals from primary batteries and a motion picture showing the process of manufacturing rubber-covered insulated wire will be presented by the Central Electric Company.

The Civil Service Commission announces competitive examinations on September 22 and October 20 for the positions of tariff examiner for the Interstate Commerce Commission. The positions pay $1,620 a year and applicants must have had three years' employment in such railroad or steamship positions as would make them thoroughly "conversant with the intricacies of the various railroad freight classifications, tariffs," etc.

At the One Hundred and Eleventh street station (Chicago) of the Illinois Central, robbers seized a registered mail sack from two boys who were in the act of placing it in a cart for transfer to the mail wagon. The sack contained $100,000 in bills of small denomination and represented the bi-weekly payroll of the Pullman Company and the Sherwin-Williams Paint Company. Upon leaving the station the robbers threw the mail sack into a waiting automobile and made their escape.

Constructive recommendations looking to an improvement in the handling of freight in the terminals are expected to be made soon by the Railroad Committee of the Chamber of Commerce of the United States. The suggestions are under preparation following a meeting of the committee at which a report on the terminal situation was made by Richard Waterman, secretary of the committee who made investigations in several of the largest cities. Heavier loading and quicker handling, the committee will point out, would add considerably to the number of freight cars in use.

The United States Railroad Labor Board has reached a decision on the demand of employees of the Bangor & Aroostook and members of the Lighter Captains' Union of New York. Hearings in both cases were held on August 13 and reported in the *Railway Age* of August 20, page 329. The decision in these cases will not, however, be made public until August 27 or 28, when the completed report of the Board will be available in printed form. Insofar as the decision in the Bangor and Aroostook case is concerned, it is believed that the award will be a duplicate of that handed down by the Board on July 20. A separate hearing for the employees of this road was necessary because it was not represented by the Conference Committee of Managers of the Association of Railway Executives, which presented the railroad's side of the wage hearing which terminated with the award of July 20. No advance information is obtainable as to the contents of the award to members of the Lighterage Captains' Union of New York.

Supplement to A. R. A. Rules of Interchange

The mechanical section of the American Railroad Association has issued Supplement 3 to the Interchange Rules of 1919, effective September 1. This supplement contains modifications of rules 3, 93, 98, 101, 106, 107, 108, 109, 110 and 111 and of rules 21 and 22 of the code for passenger cars. The changes in the prices of labor and material as adopted at the convention of the association are included in the supplement.

Coal Companies Sue Railroads for Awards

Four coal companies filed suits in the United States District Court at Philadelphia on August 21 against the Lehigh Valley and the Central of New Jersey to compel them to pay awards granted by the Interstate Commerce Commission for reparation on unreasonable rates on anthracite coal.

The plaintiffs are the G. B. Markle Company, which is suing the Lehigh Valley to compel payment of an award of $140,656.98; Pardee Brothers & Company, Inc., filing a suit against the same road for $41,289.17; the Red Ash Coal Company against the Central of New Jersey for $21,544.26, and Fenton Dodson Company, Inc., coal brokers, who sued the Jersey Central for $49.33 excessive freight charges on a shipment of coal.

The railroads claim that the damages allowed by the Interstate Commerce Commission were excessive.

Partial Summary of June Earnings and Expenses

The Interstate Commerce Commission on August 19 issued a partial summary of railway revenues, expenses and net income, covering 230,000 miles, with 14 roads, operating 5,120 miles, not included. The roads included in the report had a deficit for the month of $15,616,328, after $25,371,765 of retroactive wages for May and June had been charged into the June accounts by some roads. For the first six months of the year the same roads show a net operating income of $13,664,120, as compared with $145,930,908 in the first six months of 1919. The commission says in a foot-note that to compare the earning power of roads in 1920 and 1919 it should be noted that corporate war taxes, amounting to $11,554,321, are included in the 1920 returns but not in those for 1919; that the revenues for 1920 include approximately $50,000,000 back mail pay, and that the increased wage accruals are incomplete.

Exhibitors at the Master Blacksmiths' Convention

About 50 representatives of railway supply companies registered at the annual convention of the International Railway Master Blacksmiths' Association, which was held at the Hotel Statler, Detroit, Mich., August 17, 18 and 19. The following companies had exhibits:

Air Reduction Sales Company, New York.—Welding and cutting torches and portable welding equipment. Represented by R. T. Peabody, A. B. Brown, A. W. Brown and H. H. Melville.

Ajax Manufacturing Company, Cleveland, Ohio.—Sample forgings. Represented by J. R. Blakeslee, A. L. Guilford, R. W. Bannerman, W. J. Criley, H. D. Heman and J. A. Murray.

American Drop Forger Represented by E. C. Cook and F. C. Andersen.

Anti-Borax Compound Company, Fort Wayne, Ind.—Literature describing welding, brazing and tempering compounds.

Mahr Manufacturing Company, Minneapolis, Minn.—Model of heat treating furnace, torches, safety valves and burners. Represented by H. H. Keeler and J. R. Mathews.

National Machinery Company, Tiffin, Ohio.—Five-inch, heavy pattern, steel bed forging machine and sample forgings. Represented by E. R. Frost, F. W. Klenk, H. E. Lott, Chas. Harmon and K. L. Ernst.

Railway Journal, Chicago. Represented by E. C. Cook.

Railway Mechanical Engineer, New York. Represented by C. B. Peck.

REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Bingham & Garfield	36	$885,814	$10,014	$909,056	$190,259	$219,962	$10,309	$208,328	$24,591	$660,226	72.62	$248,830	$44,550	$204,273	$343,016
Birmingham Southern	31	207,903	.....	291,709	26,183	44,344	5,530	180,604	20,950	277,612	95.16	14,097	10,525	3,554	—63,240
Boston & Maine	2,289	23,582,832	10,397,445	38,402,714	5,959,047	8,697,890	258,066	22,623,108	1,272,536	38,989,595	101.52	—586,881	1,401,822	—2,036,374	—2,212,968
Brooklyn Eastern District Terminal	9	425,359	.....	471,623	114,523	197,280	960	336,018	24,961	673,742	142.86	—202,119	37,273	—239,392	2,369
Buffalo & Susquehanna Corp.	296	1,273,806	41,248	1,343,873	284,253	592,253	13,593	503,986	58,116	1,452,200	108.06	—108,328	19,500	—127,828	56,980
Buffalo, Rochester & Pittsburgh	589	7,602,649	809,361	8,773,541	1,447,471	3,260,099	88,509	4,251,781	235,380	9,297,473	105.97	—523,932	190,000	—714,584	199,487
Canadian Pacific (Lines in Maine)	233	1,156,613	337,803	1,571,377	317,418	397,875	17,613	1,029,359	20,960	1,783,225	113.48	—211,847	73,200	—285,047	—65,671
Central New England	301	2,552,413	140,328	2,860,559	923,251	797,544	17,539	1,832,781	92,785	3,676,887	128.53	—816,327	107,388	—923,773	—886,109
Central of Georgia	1,924	7,551,719	3,096,579	12,239,723	2,161,639	2,681,817	274,241	5,517,201	434,063	11,097,059	90.66	1,142,664	471,157	671,190	73,555
Central of New Jersey	686	15,129,799	3,937,542	20,876,340	2,592,678	6,333,860	157,116	11,478,935	557,231	21,256,419	101.82	—380,079	1,504,515	—1,884,726	—2,680,975
Central Vermont	413	2,135,682	524,345	3,020,173	496,899	885,941	55,635	2,177,868	113,724	3,743,449	123.94	—723,276	104,400	—827,731	—283,767
Charleston & Western Carolina	342	1,296,278	307,343	1,699,616	347,868	371,958	28,114	904,913	23,307	1,676,159	98.61	23,457	69,750	—46,293	—139,980
Chesapeake & Ohio	2,518	30,837,214	4,939,962	38,886,264	5,349,361	10,743,976	325,224	15,861,444	814,868	33,276,812	85.57	5,609,452	1,298,860	4,309,519	—1,454,821
Chicago & Alton	1,050	8,762,473	3,064,112	13,174,469	1,881,676	3,566,863	127,953	6,019,377	359,759	12,082,397	91.71	1,092,072	389,094	701,942	124,199
Chicago & Eastern Illinois	1,131	9,409,473	2,401,725	13,642,876	1,609,675	4,435,858	124,975	5,797,564	372,379	12,414,095	90.99	1,228,781	570,000	656,433	1,544,216
Chicago & Erie	269	4,395,563	388,940	5,358,902	582,924	963,760	82,113	2,863,393	174,336	4,687,663	87.47	671,238	239,545	431,313	—42,924
Chicago & North Western	8,196	46,648,578	16,803,643	72,139,706	11,560,145	16,993,462	556,453	35,588,817	1,817,874	67,191,268	93.14	4,948,438	4,025,630	917,478	—3,324,657
Chicago, Burlington & Quincy	9,371	57,755,053	16,046,696	83,918,675	14,672,633	17,978,147	728,236	36,968,848	2,112,456	73,414,322	87.48	10,504,353	3,997,822	6,489,548	—3,415,193
Chicago Great Western	1,496	7,099,744	2,589,893	10,971,401	2,419,211	2,832,608	176,219	5,234,224	309,166	11,072,362	100.92	—100,961	388,265	—490,052	—834,819
Chicago, Indiana & Louisville	654	4,653,966	1,496,450	6,984,956	837,566	2,208,543	145,932	3,101,984	179,711	6,562,401	93.95	422,555	292,018	130,222	—587,294
Chicago, Detroit & Can. Grand Trunk Jct.	62	539,913	83,121	745,782	102,507	160,970	7,959	427,346	20,955	719,706	96.50	26,076	26,531	—473	—332,653
Chicago Junction	12	.....	.....	1,500,458	317,354	365,234	1,496	1,594,472	56,695	2,335,252	155.63	—834,794	17,727	—852,521	—357,861
Chicago, Milwaukee & St. Paul	10,628	51,773,696	14,095,473	76,001,059	12,386,517	19,181,820	645,510	36,950,529	2,254,377	71,914,872	94.62	4,086,187	3,914,787	138,981	—507,299
Chicago, Rock Island & Gulf	461	2,279,419	580,439	3,154,464	473,167	470,566	46,422	1,252,671	76,842	2,328,957	73.83	825,506	99,367	725,973	622,561
Chicago, Rock Island & Pacific	7,620	40,717,983	15,230,579	62,120,995	10,957,267	15,619,563	676,320	28,036,229	1,406,585	56,995,818	91.75	5,125,177	2,609,451	2,510,920	—323,370
Chicago, St. Paul, Minn. & Omaha	1,749	9,499,314	3,842,750	14,754,295	1,786,274	2,721,872	145,333	6,825,187	432,097	11,992,366	81.28	2,761,930	782,291	1,976,564	835,664
Chicago, Terre Haute & South Eastern	374	2,257,809	140,567	2,470,562	354,230	847,654	25,927	1,041,479	64,420	2,342,806	94.82	127,756	114,000	13,756	285,065
Cincinnati, Indiana & Western	321	1,512,648	314,241	2,036,037	314,147	755,019	46,331	936,814	101,341	2,159,862	106.08	—123,826	78,256	—202,087	78,851
Cincinnati Northern	249	1,362,658	111,736	1,567,513	320,029	373,999	19,587	599,719	33,309	1,346,622	85.91	220,891	61,090	159,794	—102,267
Cleveland, Cincinnati, Chicago & St. Louis	2,408	26,949,509	8,653,106	40,152,511	5,010,776	9,206,722	565,921	17,030,733	810,542	32,927,834	82.00	7,224,677	1,295,326	5,925,434	594,639
Colorado & Southern	1,099	4,919,664	1,209,743	6,754,983	1,131,380	1,708,696	61,353	2,407,326	248,381	5,605,698	82.99	1,149,285	341,146	806,360	20,292
Colorado & Wyoming	43	114,892	5,457	451,867	75,042	110,362	1,264	220,197	24,625	431,490	95.49	20,377	35	—9,623	—105,753
Delaware & Hudson	858	15,524,085	1,459,730	18,114,947	2,177,877	5,732,231	154,012	9,565,905	824,370	18,591,506	102.63	—476,559	481,144	—958,139	—1,534,864
Delaware, Lackawanna & Western	956	22,698,323	5,780,567	33,162,830	3,997,863	8,037,160	435,936	16,875,340	817,415	30,665,269	92.46	2,497,561	2,133,333	363,057	—5,260,637
Denver & Rio Grande	2,585	18,320,168	3,104,729	16,848,888	2,343,977	4,174,313	195,588	6,045,302	455,947	13,526,807	80.64	3,322,089	762,000	2,544,713	1,018,630
Denver & Salt Lake	255	925,469	165,866	1,157,709	379,108	470,903	5,016	698,488	46,085	1,599,600	138.17	—441,891	60,332	—502,293	64,748
Detroit & Mackinac	376	594,890	201,015	881,434	159,107	250,490	15,388	459,405	42,781	926,727	105.14	—45,293	83,768	—129,061	30,173
Detroit, Toledo & Ironton	454	2,005,195	83,226	2,241,886	477,198	498,113	31,719	1,143,706	130,721	2,279,441	101.67	37,555	53,114	—91,463	322,924
Duluth & Iron Range	298	3,153,218	134,874	3,574,600	616,411	670,281	4,474	1,064,865	101,439	2,460,716	68.83	1,113,883	187,959	925,412	—181,936
Duluth, Missabe & Northern	406	5,112,176	292,814	5,967,174	1,094,940	924,665	16,162	1,551,628	125,152	3,783,185	62.39	2,243,989	315,539	1,928,417	—2,730,891
Duluth, South Shore & Atlantic	614	1,576,094	561,439	2,453,812	511,745	471,084	31,174	1,259,883	64,755	2,378,162	96.67	81,649	141,000	—59,452	—5,890
Duluth, Winnipeg & Pacific	178	1,000,268	162,936	1,185,212	184,490	231,768	20,397	556,883	51,239	1,044,784	85.15	140,428	64,239	76,188	25,205
East St. Louis Connecting	3	.....	.....	607,607	79,420	180,637	1,660	470,790	22,431	754,938	124.24	—147,332	15,200	—162,532	—62,517
Elgin, Joliet & Eastern	832	6,471,361	27	7,362,844	772,947	1,836,271	29,185	2,871,582	148,870	5,657,956	76.84	1,704,888	191,192	1,153,286	—711,344
Erie	1,989	34,440,443	6,098,614	45,695,796	6,389,221	16,107,475	509,199	24,524,405	1,336,285	49,258,125	107.79	—3,562,329	1,481,818	—5,065,772	—2,704,540
Detroit, Grand Haven & Milwaukee	195	1,392,441	254,261	1,924,021	340,963	493,269	30,741	1,354,396	73,064	2,292,566	119.14	—368,544	19,936	—388,807	—598,177
Florida East Coast	764	3,980,423	2,265,137	7,249,706	792,670	1,039,023	54,084	2,529,494	148,289	4,639,412	63.99	2,610,295	237,339	2,372,614	1,774,917
Fonda, Johnstown & Gloversville	57	227,483	409,549	669,053	77,520	63,695	2,675	241,314	44,596	429,801	64.24	239,252	30,100	209,152	29,128
Ft. Smith & Western	253	521,177	174,494	858,097	216,732	215,803	25,450	368,127	45,318	878,680	102.39	—20,583	30,000	—51,143	—74,498
Ft. Worth & Denver City	454	3,661,828	1,892,001	5,900,623	974,357	1,422,558	39,677	2,688,555	186,331	5,336,098	90.43	564,525	136,200	427,434	—850,930
Galveston, Harrisburg & San Antonio	1,383	7,865,098	2,662,539	11,487,498	3,601,737	2,922,979	181,230	4,424,411	366,909	11,625,896	101.20	—138,397	513,341	—662,234	—2,184,221
Galveston Wharf	13	.....	.....	649,342	163,801	17,160	2,125	215,832	14,249	512,918	78.99	136,424	92,200	44,224	45,479
Georgia	328	2,106,959	806,563	3,165,021	390,836	683,651	73,353	1,752,914	114,375	3,016,382	95.30	148,639	35,700	112,919	—422,666
Georgia & Florida	405	449,975	138,721	661,828	360,882	139,524	28,976	470,249	48,521	1,048,151	158.37	—386,323	37,498	—424,065	—235,076
Grand Trunk Western	350	5,099,058	1,215,255	6,960,378	785,402	2,114,257	104,601	3,531,611	250,477	6,828,426	98.10	131,952	284,611	—152,553	—1,451,859
Great Northern	8,175	37,020,721	8,985,661	54,240,435	11,840,483	11,094,837	494,661	22,955,801	1,182,609	48,331,047	89.11	5,909,387	4,595,702	1,302,576	—1,523,120
Green Bay & Western	252	431,421	109,465	585,231	132,804	142,658	6,522	267,970	16,519	566,434	96.79	18,797	41,169	—22,371	—34,053
Gulf & Ship Island	307	977,148	270,643	1,379,493	373,686	326,239	30,654	566,882	70,676	1,370,871	99.37	8,622	93,861	—85,412	11,177
Gulf, Colorado & Santa Fe	1,917	8,059,460	2,890,535	12,080,907	3,136,357	2,555,452	139,509	5,231,855	316,187	11,355,186	93.99	725,721	516,602	207,952	225,586
Gulf, Mobile & Northern	469	1,335,920	321,445	1,806,652	549,634	414,864	58,050	786,620	80,348	1,889,517	104.58	—82,865	79,701	—163,006	—41,171
Hocking Valley	350	5,466,253	593,671	6,449,518	806,496	2,336,264	56,321	2,536,722	182,144	5,917,861	91.75	531,657	408,228	123,429	157,177
Houston & Texas Central	885	3,439,902	1,341,961	5,295,045	1,411,497	1,100,151	77,515	2,201,078	149,491	4,939,028	93.27	356,018	263,759	87,648	—262,540
Houston, East & West Texas	190	1,019,804	305,503	1,430,049	634,720	206,560	15,897	649,969	33,867	1,541,015	107.75	—110,965	58,354	—170,959	—324,887
Illinois Central	4,799	46,992,290	12,340,365	65,780,014	11,453,967	17,755,412	585,769	27,910,919	1,479,246	59,706,935	90.77	6,073,078	3,481,890	2,575,919	616,166
Indiana Harbor Belt	120	.....	.....	3,665,566	754,211	754,899	14,615	2,767,434	116,472	4,407,631	120.24	—742,065	64,242	—806,453	—527,902
International & Great Northern	1,159	5,847,454	1,585,901	8,261,699	1,871,537	2,092,877	112,156	4,459,583	280,365	8,841,751	107.02	—580,052	195,003	—778,925	—100,198
Kanawha & Michigan	176	1,850,733	295,299	2,268,486	415,955	951,283	16,449	939,285	79,556	2,402,528	105.90	—134,041	150,000	2,284,045	—259,976
Kansas City, Mexico & Orient	272	581,827	103,450	742,328	264,160	251,162	19,374	397,478	55,489	987,663	133.04	—245,335	46,215	—291,598	79,783
Kansas City, Mexico & Orient of Texas	465	619,095	127,503	821,117	369,438	267,548	18,885	463,715	56,759	1,176,345	143.26	—355,228	38,344	—393,900	44,402
Kansas City Southern	779	6,546,357	1,395,592	8,703,292	1,332,322	1,907,646	173,820	3,331,484	338,832	7,080,323	81.35	1,622,969	397,016	1,224,563	861,418

REVENUES AND EXPENSES OF RAILWAYS.

SIX MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Lake Erie & Western	741	$4,274,161	$373,726	$4,982,984	$754,735	$1,750,759	$90,668	$2,251,217	$152,791	$4,998,463	100.31	—$15,478	$240,250	—$256,183	—$14,201
Lake Terminal	12	.....	1,310	610,485	94,272	167,466	.....	424,255	359	686,353	112.43	—75,868	35,211	—111,079	—71,488
Illinois Terminal	24	430,886	.....	455,844	23,341	52,837	4,383	111,103	28,868	220,533	48.38	235,311	6,865	228,436	—30,688
Lehigh & Hudson River	96	1,079,977	21,241	1,187,020	160,503	260,807	10,015	607,564	43,228	1,082,118	91.16	104,902	51,951	52,923	—85,975
Lehigh & New England	229	1,977,868	12,952	2,076,171	266,229	463,920	33,795	770,943	76,578	1,609,298	77.51	466,873	80,932	385,941	126,832
Lehigh Valley	1,435	24,910,411	3,276,567	30,969,441	5,066,419	9,624,620	359,449	18,981,266	719,776	34,887,559	112.65	—3,918,118	1,176,000	—5,095,252	—5,813,143
Long Island	398	2,917,362	6,544,119	10,666,610	1,660,966	2,398,284	83,086	6,443,352	327,131	10,994,340	103.07	—327,730	617,366	—947,250	—2,270,793
Los Angeles & Salt Lake	1,168	5,652,946	2,659,139	9,223,090	1,274,750	1,718,197	136,705	3,259,438	211,520	6,886,414	74.66	2,336,677	465,935	1,869,911	420,603
Louisiana & Arkansas	302	1,623,402	297,680	2,020,588	381,517	274,674	26,788	664,041	46,249	1,391,899	68.88	628,708	101,975	526,619	614,811
Louisiana Ry. & Navigation Co	343	1,597,877	250,018	1,965,815	497,968	347,537	32,619	880,608	67,602	1,826,333	92.90	139,482	84,000	55,400	183,117
Louisiana Western	207	1,705,650	633,206	2,516,632	558,757	454,677	38,627	622,948	79,896	1,770,442	70.34	746,190	120,871	624,700	7,735
Louisville & Nashville	5,040	41,496,634	11,751,668	58,323,051	10,162,515	15,898,948	1,000,021	26,485,891	1,399,842	55,254,348	94.73	3,068,702	1,758,883	1,306,738	—2,419,575
Louisville, Henderson & St. Louis	199	649,889	224,383	955,642	265,898	120,632	18,797	317,092	34,114	756,533	79.16	199,109	28,860	170,205	—74,506
Maine Central	1,216	6,141,388	2,175,138	9,154,932	1,852,988	2,257,071	68,734	5,188,196	255,977	9,630,080	105.19	—475,149	548,449	—1,023,758	—184,442
Maryland, Delaware & Virginia	82	330,416	140,002	500,816	54,269	210,112	3,681	400,226	14,626	682,916	136.36	—182,100	12,000	—194,100	156,597
Michigan Central	1,862	23,917,390	9,844,067	38,384,005	5,259,095	9,922,721	418,856	17,639,418	790,886	34,684,377	90.36	3,699,627	1,486,000	2,209,848	—4,345,994
Mineral Range	101	304,889	1,801	318,789	87,349	112,983	1,768	177,686	6,812	386,598	121.27	—67,809	22,100	—89,909	—39,690
Minneapolis & St. Louis	1,646	5,782,355	1,305,453	7,680,948	1,272,544	2,045,458	100,580	3,922,134	214,106	7,556,934	98.38	124,013	344,679	—221,687	157,678
Minneapolis, St. Paul & SS. Marie	4,243	14,162,787	3,838,952	20,194,488	3,667,661	4,050,824	217,742	9,437,277	553,514	18,058,979	89.42	2,135,509	1,669,959	463,373	1,099,865
Minnesota & International	194	419,355	176,255	642,189	151,994	112,902	3,014	309,073	21,904	598,888	93.25	43,300	31,344	11,953	47,566
Mississippi Central	164	298,365	120,909	459,631	179,516	220,296	11,892	251,001	48,607	711,314	154.75	—251,682	24,615	—276,459	—187,720
Missouri & North Arkansas	364	568,668	250,493	904,346	342,871	203,583	17,198	429,299	48,495	1,041,446	115.16	—137,101	36,053	—173,187	231,732
Missouri, Kansas & Texas	1,715	12,265,609	3,938,187	17,981,947	3,411,700	5,174,353	216,590	6,549,658	602,416	16,055,316	89.29	1,926,631	649,433	1,274,801	236,064
Missouri, Kansas & Texas of Texas	1,758	7,678,888	4,334,753	13,383,548	3,378,649	2,844,600	169,164	7,685,556	518,710	14,743,074	110.16	—1,359,526	357,394	—1,719,495	—2,017,982
Kansas, Oklahoma & Gulf	329	937,807	133,872	1,132,964	269,794	314,760	13,236	599,771	54,821	1,253,560	110.64	—120,596	69,566	—190,327	270,992
Missouri Pacific	7,299	38,101,597	9,789,753	53,575,506	10,463,011	11,862,541	773,708	21,961,940	1,442,638	46,783,118	87.32	6,792,388	1,551,948	5,225,128	3,736,482
Mobile & Ohio	1,091	6,933,708	1,085,926	8,756,786	1,656,586	2,844,587	178,464	4,222,725	284,031	9,191,728	104.96	—434,942	361,608	—796,858	107,574
Monongahela Connecting	7	.....	.....	1,513,167	166,156	217,287	3,360	682,370	38,343	1,107,517	73.19	405,650	107,355	298,294	420,046
Monongahela	108	1,447,826	145,743	1,638,637	657,722	364,003	4,300	640,889	44,845	1,711,762	104.46	—73,124	35,172	—108,296	—462,885
Montour	56	522,397	7,811	551,272	147,156	276,998	6,804	208,734	43,458	696,741	126.38	—145,468	14,332	—159,800	—6,326
Morgan's La. & Texas R. R. & S. S. Co.	400	3,636,982	1,043,937	5,089,137	1,189,118	915,952	65,163	1,613,832	146,894	3,947,046	77.55	1,142,091	244,847	895,228	570,735
Nashville, Chattanooga & St. Louis	1,247	8,196,228	2,485,812	11,795,216	1,785,684	3,112,386	306,362	4,929,073	301,789	10,483,831	88.88	1,311,386	262,000	1,048,033	1,197,470
Nevada Northern	166	845,378	58,822	939,559	163,965	160,119	5,245	247,731	28,361	606,174	64.52	333,384	49,604	283,780	95,536
New Jersey & New York	47	78,120	467,768	592,856	63,374	104,576	8,154	373,041	13,956	563,101	94.97	29,755	13,436	16,306	33,076
New Orleans Great Northern	284	902,286	272,762	1,231,718	261,372	259,996	23,258	504,153	56,135	1,127,555	91.54	124,162	70,697	53,403	99,825
New Orleans, Texas & Mexico	191	893,853	238,697	1,194,901	319,458	227,106	25,020	388,309	47,861	1,007,618	84.32	187,283	70,667	116,532	113,649
New York Central	6,069	91,106,447	41,601,122	159,367,030	24,731,497	42,348,838	1,540,250	80,552,890	4,352,928	156,278,849	98.06	3,088,181	5,894,963	—2,827,711	—18,493,145
New York, Chicago & St. Louis	574	11,219,226	524,532	12,240,636	1,351,625	2,223,785	229,213	5,137,213	393,957	9,367,058	76.48	2,673,578	330,000	2,541,609	30,378
New York, New Haven & Hartford	1,965	24,104,335	22,665,923	55,404,938	8,335,396	13,002,412	297,780	29,074,586	1,872,970	53,639,143	96.81	1,765,795	1,990,000	—233,276	—1,868,909
New York, Ontario & Western	569	3,200,649	938,146	5,095,937	958,830	1,362,532	58,430	2,734,227	155,198	5,269,220	103.40	—173,283	156,382	—329,669	—384,390
New York, Susquehanna & Western	135	1,402,568	360,109	2,017,013	262,151	462,964	15,926	1,521,381	55,135	2,317,552	114.89	—300,539	127,957	—431,498	—348,761
Newburgh & South Shore	7	.....	.....	774,826	85,185	195,802	.....	502,423	26,021	809,431	104.47	—34,605	46,820	—81,425	—176,519
Norfolk & Western	2,201	30,095,207	4,266,449	36,696,998	5,953,976	13,465,702	318,159	16,294,338	893,796	37,086,031	101.06	—389,033	2,270,000	—2,661,541	—7,224,691
Norfolk Southern	911	2,676,427	878,321	3,864,602	804,782	716,874	67,616	1,834,234	161,167	3,585,513	92.77	279,089	98,664	179,680	296,472
Northern Pacific	6,651	35,223,428	9,527,687	50,273,974	11,094,719	9,736,516	447,154	19,709,010	1,255,622	43,042,122	85.61	7,231,853	4,162,999	3,061,772	—2,391,159
Northwestern Pacific	538	1,718,191	1,207,620	3,361,255	676,918	453,987	31,977	1,468,183	91,524	2,737,214	81.43	624,040	153,548	470,033	277,911
Oregon Short Line	2,350	15,150,570	3,525,883	20,758,848	2,232,811	3,260,850	171,562	6,541,032	713,298	13,947,930	67.19	6,810,919	1,557,696	5,252,491	2,158,457
Oregon Washington R. R. & Nav. Co.	2,222	10,682,525	3,465,117	15,793,822	2,479,811	2,752,085	210,714	6,577,977	715,009	12,938,664	81.92	2,855,159	1,052,304	1,802,490	590,456
Panhandle & Santa Fe	773	2,874,772	807,818	3,992,826	923,783	1,370,265	24,443	1,729,003	98,277	4,144,097	103.78	—151,271	122,116	—273,319	392,705
Peoria & Pekin Union	19	163,038	24,007	737,403	96,559	198,954	1,333	474,215	26,893	797,954	85.12	—60,551	57,000	—117,551	190,675
Pere Marquette	2,230	12,315,070	2,936,784	17,398,467	2,397,322	4,167,125	237,138	8,494,287	596,116	15,954,370	91.69	1,444,097	382,254	1,060,532	—1,562,439
Perkiomen	41	460,627	55,979	554,674	47,114	25,298	85	236,905	1,762	311,290	56.12	243,384	13,794	229,590	9,383
Philadelphia, Bethlehem & New England	10	.....	.....	615,278	97,583	101,153	2,652	446,721	9,296	657,407	106.84	—42,125	6,180	—48,308	—68,707
Philadelphia & Reading	1,126	33,572,919	5,048,337	41,281,911	4,293,052	11,444,802	294,928	20,216,068	939,141	37,313,880	90.38	3,968,031	968,450	2,997,221	1,684,487
Pittsburgh & Lake Erie	224	10,380,538	1,406,456	12,855,945	2,674,965	5,859,978	105,552	5,456,828	344,311	14,452,155	112.41	—1,596,210	756,282	—2,352,953	—3,194,439
Pittsburgh & Shawmut	103	727,279	30,956	764,356	149,066	193,390	8,372	292,675	30,771	674,273	88.21	90,083	98,702	89,381	234,387
Pittsburgh & West Virginia	63	751,342	54,734	908,912	265,730	320,992	9,759	383,226	54,673	1,092,959	120.24	—184,047	85,879	—271,513	161,338
Pittsburgh, Shawmut & Northern	209	619,106	38,452	675,833	160,753	323,789	10,873	341,967	50,508	887,915	131.38	—212,082	11,330	—223,929	—16,954
Port Reading	21	633,697	.....	841,513	97,826	65,877	116	515,126	11,005	689,951	81.98	151,563	44,779	106,784	—306,863
Quincy, Omaha & Kansas City	255	325,344	121,203	521,831	180,280	112,943	1,742	315,074	12,611	622,494	119.29	—100,663	18,762	—119,471	—86,659
Richmond, Fredericksburg & Potomac	117	2,577,787	1,824,195	5,540,288	483,400	889,327	42,086	2,229,513	148,812	3,840,667	69.32	1,691,622	176,270	1,515,178	—1,146,180
Rutland R. R.	415	1,435,136	655,234	2,595,251	550,596	759,029	30,141	1,390,350	84,745	2,825,139	108.86	—229,888	111,223	—341,126	—266,424
St. Joseph & Grand Island	258	1,169,842	220,246	1,521,147	476,638	253,702	12,383	819,613	76,493	1,651,181	108.54	—130,034	69,363	—199,434	—178,244
St. Louis, Brownsville & Mexico	548	2,178,999	1,041,370	3,496,252	775,994	613,553	59,003	1,289,610	138,566	2,872,225	82.15	624,026	68,800	553,825	—120,969
St. Louis Merchants Bridge Terminal	9	.....	2,892	1,778,683	279,099	360,758	4,836	1,315,330	46,101	2,006,125	112.79	—227,442	55,881	—283,446	196,115
St. Louis-San Francisco	4,759	28,633,468	11,245,634	42,523,274	6,380,937	9,459,367	358,274	17,158,138	1,247,667	34,533,082	81.21	7,990,192	1,380,180	6,604,236	1,295,119
St. Louis Southwestern	947	8,149,736	1,019,203	9,704,167	1,318,519	1,760,586	225,871	2,595,996	270,692	6,200,745	63.89	3,503,423	320,489	3,182,793	2,158,120
St. Louis Southwestern of Texas	807	3,169,797	702,711	4,290,893	1,308,803	1,440,320	85,936	2,389,374	184,040	5,406,603	126.00	—1,115,710	146,468	—1,262,543	—455,192
St. Louis Transfer	6	.....	.....	648,282	50,782	102,495	1,141	319,884	14,332	488,633	75.37	159,649	1,310	153,339	99,328
San Antonio & Aransas Pass	736	1,346,890	538,500	2,134,900	675,052	584,241	39,559	1,272,748	111,373	2,681,553	125.61	—546,652	88,750	—635,692	—15,573

Convention of Chief Interchange Car Inspectors and Car Foremen

The annual convention of Chief Interchange Car Inspectors' and Car Foremen's Association will be held at the Windsor Hotel, Montreal, Que., September 14, 15 and 16. In addition to a thorough discussion of the A. R. A. rules and recent changes therein, numerous topics of importance to car men will be treated, among which are the following: Transfer and adjustment of lading under A. R. A. rules for mechanical defects; lubrication of freight and passenger equipment to secure maximum mileage and the elimination of trouble on the road on account of setting the cars out; best methods of repairing cars in train yard to avoid delay in switching cars to the repair track, freight claim prevention and standard methods of examining car inspectors and safety appliance men. The Supply Men's Association will hold an exhibit in connection with the convention. The secretary of the Chief Interchange Car Inspectors' and Car Foremen's Association is J. C. Keene, Wabash Railway, Decatur, Ill., and of the Supply Men's Association, D. B. Wright Paul Dickinson, Inc., Chicago.

Accounting for Pullman Surcharge

The committee on passenger accounts of the Railway Accounting Officers Association held a conference with the accounting representatives of the Pullman Company, at Chicago, August 18-19, 1920, and made the following arrangements for reporting to rail carriers by the Pullman Company of surcharge collections made on and after August 26, 1920:

The Pullman Company will report monthly to each individual rail line its proportion of surcharge collections on a mileage prorate based on the actual mileage traveled by Pullman passengers, this allocation to be made from trip reports (diagrams) received from Pullman conductors covering tickets lifted and cash collections.

The report will be rendered by the Pullman Company and forwarded to rail carriers within sixty days after close of month and settlement for each month's account will be made at the time the monthly reports are rendered.

The accumulation of unrefunded and undistributed surcharge collections (on Pullman tickets which were sold but not honored or redeemed) will, at the close of each year's business, be apportioned to all rail carriers pro rata on the basis of surcharge collections reported during the same year.

Master Blacksmiths Elect Officers

Following the presentation and discussion of technical papers, the International Railroad Master Blacksmiths' Association, in convention at the Hotel Statler, Detroit, Mich., August 17 to 19, inclusive, took up several matters of association business which were not touched on in the report of the convention in the *Railway Age* of August 20, page 330.

The Committee on Amalgamation with the American Railway Association, Section III-Mechanical, appointed subsequent to last year's convention, presented a brief report outlining the probable status of the association should it amalgamate with Section III-Mechanical, and received authorization to conduct the necessary negotiations, with a view to this amalgamation subject to approval at the next convention.

The secretary-treasurer reported a total membership of 245 at the close of the year and 21 new members were received during the convention. The balance in the treasury showed an increase from $141.58 last year to $227.82 this year. In order to continue to meet the increased cost of conducting the affairs of the association, however, the dues for the coming year were increased from $4 to $5 a year.

The following are the officers elected for the coming year: President, Joseph Grine, New York City; first vice-president, George Hutton, New York City, and second vice-president, S. Lewis, Canadian National. W. J. Mayer, Michigan Central, was elected secretary-treasurer to succeed A. L. Woodworth, who asked to be retired following 22 years of continuous service.

Montreal, Que., was unanimously chosen as the place for the next convention, with the provision that the Executive Committee be empowered to make other arrangements should best interests of the association so require.

Traffic News

Applications of the American Railway Express Company and twelve electric and short line railroads operating in Minnesota, for increased freight rates, will come before the Minnesota Railroad and Warehouse Commission for hearing on August 26 and 27.

Representatives of 24 of the largest finishing plants in New England cotton freight claim bureau of the Arkwright Club Piece Goods Traffic Association of New England. Quarters for the new association have been obtained at Providence, R. I. and Henry M. Tarr, for many years agent of the New England cotton freight claim burea uof the Arkwright Club of Boston, has assumed charge as traffic manager.

Assistance of the Interstate Commerce Commission to enable it to secure bunker coal for government merchant craft at reasonable prices was asked on August 20 by Chairman Benson of the Shipping Board, who conferred with Commissioners Clark, Aitchison and Potter. He said the government is now paying $18 to $20 a ton for coal at Atlantic and Gulf ports and that assignment of cars for bunker coal would enable the board to reduce its fuel bill greatly.

The number of revenue ton-miles of freight handled by the railroads during March, 1920, was 32,989,096,000, as compared with 25,706,187,000 in March, 1919, according to a summary of traffic statistics issued by the Interstate Commerce Commission. The average haul of freight per railroad was 193.38 miles, as compared with 185.48. The revenue per ton mile was .981 cents, as compared with .991 cents in March, 1919. The number of revenue passengers carried one mile was 3,529,902,000, as compared with 3,443,856,000 in March, 1919. The average miles per revenue passenger per railroad was 33.60, as compared with 36.12, and the average revenue per passenger mile was 2.612 cents, as compared with 2.562.

The Southern Pacific has reinstated the rule cancelled by the United States Railroad Administration regarding the refunding of fares of caretakers sent out to return with shipments of live stock. The reinstated rule is applicable only to the Pacific Coast lines. Middle western and eastern lines allow free transportation only on caretakers accompanying live stock and returning to points of origin. In the Middle West and East livestock is shipped to stock yards or market points and there sold, the caretakers returning to shipping points. In the absence of such stock yards on the Pacific Coast, except at Portland, Ore., it is necessary for dealers to send buyers to the country and take delivery either on the spot or at the railroad point of shipment and then return as caretakers with their livestock. The refunding of fares of caretakers sent out after livestock will place livestock dealers on the Pacific Coast in a position to buy stock in competition with the movement to middle western and eastern territories.

As briefly noted in last week's issue, the Interstate Commerce Commission on August 18 suspended provisions in a tariff, filed on behalf of the roads generally, by J. E. Fairbanks, which proposed to impose a penalty storage charge of $10 per day on all cars loaded with coal or coke not released within the free time. The tariff was filed by the roads in accordance with a special permission order issued by the commission, after a conference with representatives of the railroads and of the shippers, but the item referred to was suspended at the request of a committee of the National Industrial Traffic League, on the ground that it would apply to all open-top cars. The committee had first taken up the matter with Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, who is understood to have co-operated with the shippers in getting the suspension, and a further meeting of the two committees was to be held in New York on August 26 to arrange for a substitute for the suspended provision.

A temporary injunction preventing the attorney general of the state of Illinois from enforcing the two cent a mile passenger rate

law, when the roads emerge from government rule on September 1, was granted by the federal court at Chicago on August 24. The attorneys for the railroads operating in the State argued that the act of Congress placing the roads under government control invalidated the law fixing the passenger rates within the state at not more than two cents a mile. The attorneys for the State held that the law was not repealed by the railroad acts of Congress and that even though 18 states had not opposed the increase, none of these states had an intrastate rate law such as in Illinois.

The contest will come up for further hearing on September 8, the date set by the Interstate Commerce Commission for the hearing of the applications of Illinois roads to increase their freight and passenger rates in accordance with the rate recently allowed by the commission. In the meantime passenger rates in Illinois will advance to 3.6 cents a mile on September 1.

No Increase in Passenger Fares in New York

The Public Service Commission (second district), of New York, on August 19 announced its decision approving an increase of 40 per cent in freight rates in New York state, but denying the applications of the carriers for an increase of 20 per cent in passenger fares, or of 20 per cent on milk. As to passenger fares the commission decided that it would have to be governed by the statutes limiting the passenger fares to 3 cents a mile on the railroads in New York except between Albany and Buffalo, on the New York Central, where the statutes require a rate of 2 cents a mile.

"There is no express authority given to the commission," says the decision, "to grant rates in excess of those authorized by statute except under Section 49, which has to do only with rates insufficient in themselves. We should not in the absence of legislative authority arrogate to the commission power to authorize a rate in excess of the statutory maximum merely to enforce a recent act of Congress which contains within itself a special remedy."

As to rates on milk and cream, the decision reads as follows:

"In so far as the petition asks an increase of 20 per cent in rates on fluid milk, cream, and articles taking the same rates, the Interstate Commerce Commission treated this traffic on the same basis as it treated the passenger rate, because milk and cream are usually carried in passenger trains. It may be that in this State the great bulk of milk and cream is carried in a special milk train, but their equipment and movement harmonize more closely with passenger operation than with freight operation. Fluid milk, cream and articles taking the same rates, should therefore be excepted from the operation of this order."

The Public Service Commission for the First District on August 20 announced a decision giving the same results.

Coal Production

Production of soft coal during the week of August 4 rose to the highest point attained in any week since last January, according to the weekly bulletin of the Geological Survey. Preliminary estimates place the total output at 11,728,000 net tons, an increase over the last week before the strike of 848,000 tons, or 8 per cent. Whether this rate can be long sustained, remains to be seen, the bulletin says, because one element in the improvement was undoubtedly the accumulation of empty cars during the strike. Telegraphic reports from the principal coal-carrying roads indicate that loadings on Monday and Tuesday of the following week were slightly less than on the corresponding days of the week before. Production during the first 193 days of the year show a decrease of 16½ million tons, as compared with 1917, and of 38 million tons as compared with 1918, but an increase of 48¼ million tons as compared with 1919.

For the week ending August 7, when many mines were still closed by the strike, the loss of full-time output attributed to labor was 19.5 per cent, and that attributed to transportation was only 18.8 per cent. The week was marked by a widespread improvement in car supply in districts remote from the strike area, which, the bulletin says, must have been in part attributable to the accumulation of empty cars, but the reports indicate also that the carriers had made progress in clearing up the congestion of transportation which has been the primary cause of the reduced production of coal in recent months.

Dumpings at Lake Erie ports for the week of August 14 were the largest of the present season. The total lake movement since the opening of navigation now stands at 8,641,000 tons, as against 14,300,000 in 1918 and 15,000,000 in 1919. Loadings for lake destinations during the third week of the Interstate Commerce Commission's service order exceeded the quota, but the cumulative movement was still 8,171 cars, or 12 per cent, behind schedule. Tidewater shipments declined slightly. Dumpings at Hampton Roads indicate a decline in the tonnage handled for New England account and a slight increase in the quantity exported. Shipments to New England under the commission's service order were 84 per cent of the program for the first two weeks of the order. Rail shipments to New England declined.

Express Company Asks Further Increases in Rates

The American Railway Express Company has filed with the Interstate Commerce Commission a supplementary application alleging that the increased express rates authorized by the commission on August 11 are insufficient by reason of the increases in wages made necessary by reason of the recent awards of the United States Railroad Labor Board. The commission's finding in that decision did not take into consideration increases in operating expenses due to the wage award. The application was assigned for further hearing concerning the propriety and the lawfulness of the rates now proposed on August 27, at Washington, before Examiner Barclay. The commission in the original case allowed an increase of 12.5 per cent, estimated at about $36,000,000 a year, and the company states that an additional increase of 15 per cent is necessary to pay the wage increases.

Rates Readjusted to Promote Lake Movement of Grain

A readjustment of the ex-lake grain rates to promote the movement of grain from the northwest via the lakes and thus relieve the rail lines, which has been the subject of conferences between the Interstate Commerce Commission, the railroads and the grain shippers, was announced by the commission on August 25 as follows:

"In the hope of stimulating a movement of bulk grain from Lake Superior and Lake Michigan ports to Lake Erie ports for movement by rail beyond to the Atlantic seaboard territory, both for export and for domestic use, and thus relieving congestion on the all-rail lines between Chicago and the Atlantic seaboard, releasing cars at the western lake ports for return to the grain fields, and reducing the long haul of empty cars from the seaboard to the west, the commission suggested to the trunk line carriers from the Lake Erie ports to the seaboard the advisability of promptly readjusting the ex-lake rates on grain in bulk from Buffalo, Erie and Fairport by applying to those rates lower percentages of increase than were authorized by the commission in Ex Parte No. 74, *Increased Rates*, 1920. This suggestion was cheerfully accepted by these carriers and the commission has issued special permission authorizing the adjustment of those rates on one day's notice. These rates will be readjusted on the bases of 30 per cent increase in the domestic rates and 25 per cent in the export rates instead of the 40 per cent authorized in Ex Parte 74. The increases will be computed by deducting the elevation charge which is included in the rate, increasing the net rate by the percentage named, and adding back the elevation charge. These rates will be made effective not later than September 1 and will be published to expire at midnight February 28, 1921.

"It should be understood that these concessions are made by these carriers solely for the reasons which prompted the commission to make the suggestion, and are not to be considered as a precedent in or as prejudicing any future adjustment of these rates. Under this readjustment the lake-and-rail rates will be about 3 cents per 100 pounds lower than the all-rail rates based upon the present costs of lake transportation, marine insurance, etc. It is to be hoped that this readjustment will induce a large movement of grain over these routes. If that result is attained, it will effect a substantial contribution to the number of cars available for moving grain in the grain belt states."

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has made public the tentative report of Examiner F. H. Barclay in the express classification case recommending with certain modifications the proposed changes in the official express classification proposed by the American Railway Express Company.

The Interstate Commerce Commission has suspended, from August 25 to December 23, a proposed rule providing that rates to and from Galveston, Tex., will include absorption of terminal charges only to the extent authorized in Texas Lines Tariff 21-C, and that any terminal charges, lawfully on file with the Interstate Commerce Commission in excess thereof, will be in addition to the rates.

Increased Minimum Weights on Grain and Grain Products

On March 17, the Interstate Commerce Commission issued Special Permission No. 49801 authorizing carriers generally throughout the United States to file with the commission special supplements establishing certain increased carload minimum weights on grain and grain products, and rules and regulations applicable thereto, to expire with August 31. Information in the possession of the commission indicates that the emergency that justified the establishment of the increased minimum weights still exists, but that certain changes and modifications should be made to meet present conditions. It has therefore issued a new order, authorizing all carriers to publish and file on one day's notice special supplements to their tariffs establishing increased minimum weights on grain and grain products, and rules and regulations applicable thereto, in part as follows:

Grain, all kinds, minimum weight marked capacity of car, except where marked capacity is less than 40,000 pounds, in which case minimum weight will be 40,000 pounds per car.

Note: When grain is loaded at point of origin to within 24 inches of roof, at side walls of car, for the purpose of federal or state inspection, or for inspection by grain exchange at points where federal inspection is maintained (notation to that effect being inserted in the bill of lading by shippers) or when grain is loaded to proper grain line of cars so marked, actual weight will apply.

Grain Products in straight or mixed carloads, or in mixed carloads with other articles when tariffs provide that the grain, grain product or grain by-product (flour, meal, etc.) commodity rates apply on such mixtures: Minimum weight 48,000 pounds per car (see notes 1, 2, 3 and 4.)

Note 1: When marked capacity of car is less than 48,000 pounds, the marked capacity, but not less than 40,000 pounds per car, will apply.

Note 2: When the car is loaded to full space capacity, actual weight will apply.

Note 3: Actual weight will apply upon molasses feeds or other stock feeds having liquid sweetening ingredients (not medicated or condimental) when cars are loaded at point of origin to within 24 inches of the roof at the side walls.

Note 4: On grain and grain products handled under transit arrangements the minimum weight from transit point will be the same as the minimum weight into the transit point, except, when a car of less capacity is furnished at transit point, in which case the minimum weight as applicable to such car of less capacity, will apply, or where the shipment from transit point consists of grain products, the minimum weight on such grain products from transit point will be the same as provided on grain products into the transit point.

The order provides that the minimum weights, rules and regulations authorized shall expire with close of business December 31, 1920, and that effective January 1, 1921, there shall be restored the minimum weights and rules and regulations applicable thereto in effect November 2, 1919.

Foreign Railway News

Major Viscount Stopford of Ireland and formerly of the South African Government Office, and E. H. Bellman, office manager of Baldwin Locomotive Works, London, are sailing from England on September 16 for a two months' visit to America on the invitation of S. M. Vauclain, president of the Baldwin Locomotive Works. These gentlemen are coming to the United States for the purpose of studying the conditions prevailing here.

English Freight Rates to Be Increased

Sir Eric Geddes, Minister of Transport for Great Britain, has announced that the increase for the rates on English roads will be in operation on September 1.

Superheaters for Belgian Locomotives

The Locomotive Superheater Company has received orders for 92 superheater equipments to be applied to seventy-five 4-6-0 locomotives and seventeen 2-10-0 locomotives to be built by twelve different locomotive builders in Belgium.

German Railway Men Ask for Increases

The latest demand for increase in wages by the railway officers and workers in general in Germany is calculated to create an additional expense of from 2,500,000,000 Mks. to 3,000,000,000 Mks, or from $600,000,000 to $750,000,000 at the normal rate of exchange.

Russian Soviets in Market for Locomotives

LONDON, Eng.

The Russian Soviet Government has sent Messrs. Krassin and Ivitsky to London to negotiate for the purchase of locomotives. Mr. Krassin is a representative of the Soviet Government and Mr. Ivitsky is the engineer in charge of design. It is reported that Russia needs 5,000 locomotives, but these gentlemen are negotiating for the purchase of from 200 to 300. As this is written the Poland crisis has held up all negotiations.

English Excursion Trains

AUGUST 12, 1920.

The Great Eastern Railway was the first to inaugurate special excursion trains since the increase in passenger fares. These special trains leave in the morning and return in the evening at rates of approximately one way 3rd class fare for the round trip. The London, Brighton & South Coast and the South Eastern & Chatham are arranging to run excursion trains in the near future. These trains will run during the middle of the week only.

Strike of Mechanics on Great Western Railway

LONDON.

The London Times of August 6 reports a strike on the Great Western Railway of over 360 skilled mechanics, the centers affected being Gloucester, Exeter, South Wales, Swindon, Bristol, Birkenhead, Chester, Shrewsbury, Worcester and Wolverhampton. The trouble arose in South Wales, where the men refused to work overtime. A demand was made of £5, or approximately $25, a week, which was increased to £6, or approximately $30, when it went to arbitration before an Industrial Court. The average rate of pay at present is stated to average £4 and 15 shillings (approximately $23.75). The Industrial Court decided that the demand for the increase had not been made out, and, dissatisfied with this decision, the men struck.

The coal traffic in South Wales has been affected through the large number of locomotives being held up in the "running" shed for small repairs, the work on which the strikers are employed, and it is believed that if the stoppage continues passenger service also will be interrupted.

Trade Commissioner to China

Frank Rhea, who as trade commissioner for the Bureau of Foreign and Domestic Commerce investigated the markets for American railway supplies in Australia and New Zealand and in China, Japan, etc., is about to return to China in the capacity of industrial trade commissioner. His purpose will be to study and follow industrial development, transportation, and especially to investigate the feasibility of the investment of American capital in public and semi-public enterprises in China.

Mr. Rhea's nominal headquarters will be in Peking, but he expects to spend undoubtedly the better share of his time in Shanghai because of the importance of the latter city as a trade and commercial center. His address in China will be in care of the American Consulate at Shanghai, which will enable communications to be sent him through the American post office at Shanghai to which domestic mail rates apply.

Exports of Locomotives in June

The exports of steam locomotives in June totaled 163, valued at $4,284,348. The larger portion of these was shipped to Belgium. The detailed figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF STEAM LOCOMOTIVES

Countries	Number	Dollars
Belgium	49	2,653,500
France	61	858,000
Sweden	1	18,992
Canada	12	114,417
Honduras	5	14,056
Mexico	15	204,550
Newfoundland and Labrador	1	19,290
Cuba	8	186,535
Dominican Republic	2	36,800
Colombia	4	56,442
British Guiana	1	22,700
Dutch East Indies	2	16,466
Australia	2	82,600
Total	163	4,284,348

Exports of Railway Track Material in June

Exports of steel rails in June totaled 49,260 tons, valued at $3,080,619. Exports of spikes totaled 3,651,759 lb., valued at $165,649, and of switches, frogs, splice bars, etc., $556,959. The detailed figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF RAILWAY TRACK MATERIAL

Countries	Spikes		Steel Rails		Switches, Frogs, Splice Bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Bulgaria	.....	.....	.....	.....	892
France	.....	.....	400	32,437	.....
Netherlands	.....	.....	28	1,600	.....
Norway	.....	.....	.....	.....	1,158
Portugal	.....	.....	212	14,424	.....
Spain	.....	.....	.....	.....	232
England	.....	.....	.....	.....	11,738
Scotland	.....	.....	150	5,812	.....
Ireland	.....	.....	179	11,449	.....
Canada	59,901	3,558	2,360	126,694	40,332
Costa Rica	10,000	480	294	18,425	2,549
Guatemala	10,000	535	.....	.....	602
Honduras	158,200	7,265	1,347	75,783	1,448
Nicaragua	1,000	70	91	5,400	3,088
Panama	33,744	1,366	.....	.....	1,806
Salvador	30,600	1,759	.....	.....	.....
Mexico	56,494	4,363	491	31,447	13,170
Newfoundland and Labrador	.....	.....	.....	.....	36
Jamaica	160	15	138	6,742	1.886
Cuba	1,060,087	40,453	11,036	590,077	132,160
Dominican Republic	82,350	5,558	228	15,081	20,263
Argentina	76,750	4,295	475	29,352	1,338
Brazil	151,323	7,871	524	33,113	8,806
Chile	.....	.....	1,814	123,440	151
Colombia	2,800	220	22	1,010	173
Ecuador	7,218	517	137	9,406	59
British Guiana	21,800	970	304	19,380	901
Dutch Guiana	20,000	1,125	252	16,065	901
Paraguay	.....	.....	128	7,900	1,500
Peru	199,512	8,597	894	52,534	8,240
Uruguay	25,600	978	265	19,848	.....
Venezuela	4,300	232	65	3,645	207
China	114,028	5,127	237	16,349	5,276
British India	.....	.....	100	4,891	180
Straits Settlements	.....	.....	.....	.....	42
Dutch East Indies	.....	.....	1,479	80,049	82,623
Japan	1,349,676	61,916	22,498	1,539,242	149,058
Australia	.....	.....	.....	.....	11,994
New Zealand	.....	.....	.....	.....	500
Philippine Islands	169,016	7,987	2,206	112,346	9,654
British South Africa	.....	.....	1,266	76,678	43,996
Portuguese Africa	7,200	392	.....	.....	.....
Total	3,651,759	165,649	49,620	3,080,619	556,959

Equipment and Supplies

Locomotives

THE PARIS ORLEANS is inquiring for 50, 2-8-2 type locomotives.

THE NEW ZEALAND GOVERNMENT RAILWAYS are in the market for 25, 4-6-2 type locomotives.

THE UNITED FRUIT COMPANY has ordered 5, 4-wheel plantation locomotives from the Bell Locomotive Works, Inc.

THE PAMPANGA SUGAR MILLS, Philippine Islands, has ordered 1 plantation locomotive from the Bell Locomotive Works, Inc.

THE FAJARDO SUGAR COMPANY, Porto Rico, has ordered 1 plantation locomotive from the Bell Locomotive Works, Inc.

THE PAMPANGA SUGAR DEVELOPMENT COMPANY, Philippine Islands, has ordered 4, 4-wheel plantation locomotives from the Bell Locomotive Works, Inc.

THE ERIE RAILROAD, reported in the *Railway Age* of July 23 as about to enter the market for 75 locomotievs, is now inquiring for 35 Mikado type locomotives.

THE NATIONAL RAILWAYS OF MEXICO, Mexican Government Administration, Woolworth building, New York, are in the market for 10 or more Consolidation type locomotives.

THE NEW YORK, CHICAGO & ST. LOUIS, reported in the *Railway Age* of July 16, as being in the market for 5 Mikado type locomotives has given an order to the Lima Locomotive Works for 6 Mikado type locomotives.

MITSUI & CO., 65 Broadway, New York, is in the market for 3 Consolidation type locomotives for the Shantung Railway, China. This firm has also been in the market for some time for 3 Pacific type locomotives for the same road.

Freight Cars

THE SEABOARD LINE is inquiring for 300 phosphate cars.

THE ILLINOIS STEEL COMPANY, Chicago, is inquiring for 20 tank cars.

THE SEABOARD AIR LINE is inquiring for 350 flat cars of 40 tons capacity.

THE FLORIDA EAST COAST is inquiring for 10 tank cars of about 50 tons capacity.

THE GULF COAST LINE is inquiring for 500 box, 400 gondola and 50 tank cars.

THE ARMS PALACE HORSE CAR COMPANY, Chicago, is inquiring for 25 horse cars.

THE LIBERTY STEEL PRODUCTS COMPANY, New York, is inquiring for 10 tank cars.

THE BROWN COMPANY, Berlin, N. H., is inquiring for 200 rack cars of 40 tons capacity.

FOX BROTHERS & COMPANY, 126 Lafayette street, New York, is inquiring for 200 cane cars.

THE MCMYLER INTERSTATE COMPANY, Cleveland, Ohio, is inquiring for 50 trucks of 50 tons capacity.

THE AMERICAN TRADING COMPANY, New York, is inquiring for 40 flat cars of 30 tons capacity for export to Cuba.

THE EASTERN CAR COMPANY, LTD., New Glasgow, N. S., is preparing estimates on 2,500 cars for export to New Zealand.

THE GREY STEEL PRODUCTS COMPANY, 111 Broadway, New York, is inquiring for 250 tanks cars of from 6,000 to 8,000-gal. capacity.

THE DENVER & RIO GRANDE is inquiring for from 250 to 500 general service gondola cars, also for 250 to 500, 40-ton double sheathed box cars.

THE WORLD WIDE TRADING COMPANY, INC., 212 Fulton street, New York, is in the market for 30 cane cars, with iron frames, of 20 tons' capacity.

THE NATIONAL TUBE COMPANY, reported in the *Railway Age* of July 9 as inquiring for 300, 70-ton hopper cars, has withdrawn its inquiry for these cars.

THE EGYPTIAN STATE RAILWAYS, reported in the *Railway Age* of July 2 as being in the market for 50 tank cars, have ordered this equipment from British builders.

THE NATIONAL RAILWAYS OF MEXICO, Mexican Government Administration, Woolworth building, New York, are in the market for 50 tank cars of 12,000-gal. capacity and 100 box cars of 50-tons capacity.

Passenger Cars

THE CHICAGO & NORTH WESTERN is inquiring for 2, 60 ft. postal cars.

THE NORTH WESTERN RAILWAY OF BRAZIL is inquiring for 10 first-class passenger coaches.

TAKATA & COMPANY, 50 Church street, New York, are inquirfor 20 passenger cars for the Shantung Railway.

MITSUI & CO., 65 Broadway, New York, is in the market for 20 bogie trucks for passenger car equipment to be used on the Tokyo Municipal Railways.

THE NATIONAL RAILWAYS OF MEXICO, Mexican Government Administration, Woolworth building, New York, are in the market for 25 first-class coaches.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand steel underframe palace stock car, for shipping show horses.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a combination passenger and baggage car about 70 feet long, with steel underframe.

THE W. E. STEWART LAND COMPANY, 2049 Main street, Kansas City, Mo., wants 15 or 20 Pullman-kitchen or straight sleeping cars, of 12 to 16 sections, 60 or 70 ft. in length, of approximately 80,000 lb. capacity and with 6-wheel trucks.

Iron and Steel

THE INDUSTRIAL MATERIALS COMPANY, 132 Nassau street, New York, is in the market for 8,000 tons of 70 lb. rail for export to Scandinavia.

Signaling

THE CANADIAN PACIFIC has ordered from the Union Switch & Signal Company a Saxby & Farmer interlocking machine, 24 working levers, for installation at Donan, Manitoba.

Miscellaneous

DUTILH-SMITH, MCMILLAN & CO., INC., New York, export agents of the Chicago Railway Equipment Company, has ordered 100 brake beams for the South Manchuria Railway.

DUTILH-SMITH, MCMILLAN & CO., INC., New York, has ordered from the National Malleable Castings Company 180 pairs of Sharon couplers and 24 pairs of Tower couplers for shipment to the Central Railroad of Brazil. This company has also been getting prices on a large number of machine tools for shipment to South America.

Supply Trade News

R. E. Hollowell has been elected treasurer of the Arms **Palace Horse Car Company,** Chicago.

The National Industrial Conference Board announces that on and after August 23, 1920, its headquarters (now in Boston), will be located at 10 East 39th street, New York.

William S. Noble has been appointed manager of the railroad department of the **Standard Paint Company,** with offices in the Woolworth building, New York, and Plymouth building, Chicago.

The Mono Corporation of America announces the removal of its main office from Buffalo, N. Y., to 25 West Broadway, New York City, where a complete line of the automatic continuously recording gas analyzing instruments manufactured by this corporation will be displayed.

Captain George B. Malone, who formerly served with the United States Army Engineers and later was general manager of the **K-G Welding & Cutting Company,** 556 West Thirty-fourth street, New York, has recently been placed in charge of its Philadelphia (Pa.) office at 929 Chestnut street.

The Rogatchoff Company, 205 Water street, Baltimore, Md., has recently been incorporated under the laws of Maryland, with a capital of $50,000, to manufacture adjustable crossheads for locomotives. **A. E. Davis** is president, **Theodore Rogatchoff** is vice-president and **H. V. Baker,** secretary and treasurer.

William N. Thornburgh, Incorporated, and the Drexel Sash & Door Company, Chicago, have been consolidated and are now known as the W. N. Thornburgh Manufacturing Company, manufacturers of Thornburgh dust guards. The new plant and offices are located at Fiftieth avenue and Thirty-second street, Cicero, Ill.

W. Woodward Williams, vice-president of the Reading Iron Company, Reading, Pa., has resigned, effective September 1, to become assistant to the president of the **Pittsburgh Gage & Supply Company,** Pittsburgh, Pa. This company is a large jobber of mill, mine and railway supplies. A portrait of Mr. Williams and a sketch of his career were published in the *Railway Age* of October 13, 1919 (page 899).

Walter Rautenstrauch, professor of mechanical engineering at Columbia University for the past 14 years, has been elected vice-president of the **J. G. White Management Corporation** in charge of its industrial department, with office at New York, and in addition will continue to hold his professorship at Columbia. He was formerly assistant professor of machine design at Cornell University, and during his residence in New York has acted as consulting engineer for a number of corporations and designed a large number of machines for improving manufacturing processes. He reorganized methods of operation in a number of plants in this territory and also acted as general manager and director in manufacturing corporations, having supervision of finance, operation, manufacturing methods and general business procedure. His appointment as vice-president of the J. G. White Management Corporation places him in charge of all the industrial problems handled by this concern. This corporation is an extensive operator of properties in the United States and also in foreign countries and is closely associated with the J. G. White Engineering Corporation, which has carried on extensive construction work in railways, power plants, industrial properties, water works, hydro-electric development of all sorts in this country and abroad. Professor Rautenstrauch is the author of a number of books and of articles published in technical journals; he is a member of the National Research Council, American Society of Mechanical Engineers, American Society of Refrigerating Engineers, American Academy of Political and Social Science, Franklin Institute, etc.

Railway Financial News

BOSTON & MAINE.—Judge Edgar Aldrich, of the United States District Court at Concord, N. H., has denied the petition of Edward F. Brown and other minority stockholders for an injunction against this railroad and the appointment of a temporary receiver. The petition for a permanent receiver is left pending.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—This company has applied to the Interstate Commerce Commission for authority to sell or pledge as collateral $770,000 of its equipment trust certificates, Series A, of 1917, now in its treasury, and to issue additional certificates, Series B, under the same trust as amended June 1, 1920, to the amount of $950,000, for the purchase of 6 Mikado freight locomotives, 4 switching locomotives, and 125 stock cars, having a total estimated value of $962,800.

DETROIT, TOLEDO & IRONTON.—Leon Tanenbaum and Benjamin M. Strauss, minority stockholders of this company, have brought suit in the Supreme Court against Henry Ford, Edsel Ford and the directors of this railroad to prevent the execution of the lease of the line to a holding company for 75 years. The plaintiffs allege that the diversion of profits through the terms of the lease would render the stock worthless to the minority stockholders.

LOUISIANA & ARKANSAS.—The Interstate Commerce Commission has authorized this company to issue equipment trust notes to the amount of $220,000, maturing serially in from six months to five years, at 6 per cent, for the purpose of purchasing four 10-wheel locomotives, one 100-ton steam wrecking crane, one Jordan spreader, one 6-ton locomotive crane and two steel passenger coaches.

NEW YORK CENTRAL.—The Interstate Commerce Commission has ordered a hearing, before Director W. A. Colston, of its Bureau of Finance, at Washington, D. C., on August 30, on this company's application for authority to issue the $25,000,000 10-year 7 per cent collateral trust gold bonds, and $25,000,000 6 per cent refunding and improvement mortgage bonds to be deposited as collateral for the 7 per cent bonds. The company's application was dated August 19, the day before the bonds were sold subject to the commission's approval. Notice of the filing of the application and of the hearing has been given to the governors of the states traversed by the company's lines, in accordance with the provisions of the transportation act.

PITTSBURGH & LAKE ERIE.—The Interstate Commerce Commission has granted this company's application for authority to issue promissory notes to the amount of $2,125,000. These consist of one for $625,000 to the Western Transit Company; seven notes for $100,000 and one for $50,000 to the Union Trust Company of Pittsburgh; and five notes for $100,000, four for $50,000, and two for $25,000 to the Union Trust Company of Pittsburgh.

The Pittsburgh & Lake Erie has also been authorized to issue a promissory note for $500,000, payable to the Farmers' Loan & Trust Company, secured by $500,000 of Liberty Loan bonds, in order to renew for the seventh time a note issued by the applicant October 24, 1918, and also a promissory note for $425,000, payable to the Union Trust Company of Pittsburgh, secured by $500,000 Liberty Loan bonds, in order to renew with curtailment for the seventh time note for $500,000 issued October 24, 1918.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—The Missouri Pacific, the Missouri, Kansas & Texas, the St. Louis-San Francisco, and the Chicago, Rock Island & Pacific filed a request in the United States District Court at St. Louis, Mo., on August 12, for the appointment of a receiver for the Terminal Railroad Association of St. Louis, alleging that the reorganization of the terminal company, ordered by the United States Supreme Court on April 22, 1912, had not been carried out.

IT IS NOT TOO MUCH TO SAY that the state commissions are about to disappear from the field of rate-making.—*The Wall Street Journal.*

Railway Officers

Executive

John A. Fenno, treasurer and superintendent of the Boston, Revere Beach & Lynn, has been elected president, succeeding M. O. Adams, deceased, and **Karl Adams** has been appointed to succeed Mr. Fenno.

Financial, Legal and Accounting

G. W. McElwain has been appointed assistant auditor of passenger accounts on the Southern Pacific and **A. L. Wilson** has been appointed assistant auditor of disbursement accounts, effective July 1.

William O'Brien, assistant auditor of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has been appointed auditor, succeeding W. E. Osborn, resigned; **F. G. Middleton** has been appointed to succeed Mr. O'Brien as assistant auditor.

Operating

E. W. Morrison, formerly superintendent of the Beloit division of the Chicago, Milwaukee & St. Paul, has resigned from railroad service.

E. B. Rock, Jr., has been appointed assistant to the general manager of the Gulf & Ship Island, with headquarters at Gulfport, Miss., effective September 1.

Andrew J. Farrell, who has been appointed superintendent of the Shamokin division of the Philadelphia & Reading, with headquarters at Tamaqua, Pa., as noted in the *Railway Age* of July 30 (page 209), served as trainmaster previous to this promotion. Mr. Farrell was born on September 5, 1870, at Ashland, Pa. He was educated in public schools and began railroad work in October, 1883, as a messenger for the Philadelphia & Reading, to which road he has given his entire railroad service. In 1884 he became a telegraph operator and served in that capacity until February 1, 1889, when he was appointed train despatcher. He was promoted to assistant trainmaster on December 23, 1897, and retained that position until January 28, 1918, when he was appointed trainmaster.

A. J. Farrell

H. A. Connett, chief train despatcher on the Union Pacific, with headquarters at Evanston, Wyo., has been appointed trainmaster of the first sub-division branches, with headquarters at Omaha, Neb., effective August 15.

E. L. Magers, superintendent of terminals of the St. Louis-San Francisco, with headquarters at Birmingham, Ala., has been transferred to Springfield, Mo., effective August 20, succeeding **J. T. L. Brooks,** who has been assigned to other duties. **E. M. Mohler** succeeds Mr. Magers.

S. A. Covington, acting general superintendent of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Tex., has been appointed general superintendent, with the same headquarters; **T. F. Durkin,**

assistant superintendent of the 3rd division of the Denver & Rio Grande, with headquarters at Gunnison, Col., has been appointed inspector of transportation, with headquarters at Fort Worth. Both appointments became effective August 16.

J. H. Aydelott, superintendent of the Casper division on the Chicago, Burlington & Quincy, with headquarters at Casper, Wyo., has been promoted to assistant superintendent of transportation, with headquarters at Chicago, effective August 12. **J. C. Grisinger,** superintendent of the Sterling division, with headquarters at Sterling, Colo., has been transferred to succeed Mr. Aydelott and **C. C. Holtorf,** superintendent of the Wymore division, with headquarters at Wymore, Neb., succeeds Mr. Grisinger. **M. F. McLaren** succeeds Mr. Holtorf.

H. B. Grimshaw, general superintendent of the southern district of the Seaboard Air Line, with headquarters at Savannah, Ga., has been appointed assistant general manager in charge of fuel efficiency, with headquarters at Portsmouth, Va.; **H. W. Purvis,** superintendent of the South Carolina division, with headquarters at Jacksonville, Fla., has been appointed general superintendent, succeeding Mr. Grimshaw; **G. L. Hurley,** superintendent of the Alabama division, with headquarters at Savannah, Ga., has been transferred to succeed Mr. Purvis; **E. C. Bagwell,** superintendent of the East Carolina division, with headquarters at Charleston, S. C., has been transferred to succeed Mr. Hurley; **E. T. Gibson,** assistant superintendent of the North Carolina division, with headquarters at Hamlet, N. C., has been appointed to succeed Mr. Bagwell; **W. G. Jones,** trainmaster of the North Carolina division, with headquarters at Raleigh, N. C., has been appointed to succeed Mr. Gibson; **C. L. Sauls,** trainmaster of the Georgia division, with headquarters at Abbeville, S. C., has been transferred, succeeding Mr. Jones; **M. H. Gold,** trainmaster of the East Carolina division, with headquarters at Andrews, S. C., has been transferred to succeed Mr. Sauls; **J. P. Carter** has been appointed trainmaster to succeed Mr. Gold; **T. A. Norris,** chief despatcher of the Virginia division, with headquarters at Raleigh, N. C., has been appointed trainmaster, succeeding B. G. Roberts, assigned to other duties; **W. G. Guess,** assistant chief despatcher at Raleigh, has been appointed Mr. Norris's successor, and **W. C. Kirby** has been appointed terminal trainmaster at Jacksonville, Fla., succeeding R. A. Champlin, assigned to other duties. These changes became effective August 15.

Traffic

P. Mooney, assistant general freight agent of the Canadian National with headquarters at Quebec, Can., will act as general agent in the freight department of the Grand Trunk, effective August 10.

Mechanical

C. G. Juneau, acting master car builder of the Chicago, Milwaukee & St. Paul, has been appointed master car builder, with headquarters at Milwaukee, Wis., effective August 1.

C. M. Jacobson, shop superintendent of the Seaboard Air Line, with headquarters at Jacksonville, Fla., has been transferred to Portsmouth, Va., succeeding B. E. Greenwood, assigned to other duties; **F. W. Knott,** master mechanic of the Alabama division, with headquarters at Savannah, Ga., has been appointed shop superintendent to succeed Mr. Jacobson; **J. B. Brown,** master mechanic of the East Carolina division, with headquarters at Andrews, S. C., has been transferred to succeed Mr. Knott; and **H. McLendon,** general locomotive foreman at Savannah, has been promoted to master mechanic, to succeed Mr. Brown. All changes were effective August 15.

H. M. Curry, mechanical superintendent of the Northern Pacific, with headquarters at St. Paul, Minn., has been appointed general mechanical superintendent, with the same headquarters, effective August 14. Other appointments of the Northern Pacific effective the same date are: **W. J. Bohan,** assistant mechanical superintendent at St. Paul, appointed assistant general mechanical superintendent, with the same headquarters; **R. M. Crosby,** general master mechanic at Tacoma, Wash., promoted to mechanical superintendent, lines west of Paradise, Mont., with the same headquarters; **Silas Zwight,** assistant mechanical superintendent at St. Paul, promoted to superintendent lines east of Paradise, with the same headquarters.

Charles H. Hogan, who has been appointed manager, department of shop labor of the New York Central, with headquarters at Buffalo, N. Y., as noted in the *Railway Age* of August 6 (page 260), served as assistant superintendent motive power of the first district, with headquarters at Albany, N. Y., previous to this promotion. Mr. Hogan was born in Cleveland, Ohio, on January 9, 1850. He received a public school education and began railroad work as a track worker for the New York Central on April 1, 1865. From 1867 to 1871 he served the Union Pacific, first as fireman and later as engineer. He then returned to the New York Central as locomotive engineer and filled that position until 1893, when he was appointed traveling engineer. In 1900 he was promoted to master mechanic and in May, 1904, he became division superintendent motive power, with headquarters at Depew, N. Y. On August 1, 1910, he was appointed assistant superintendent motive power at Albany, as mentioned above.

C. H. Hogan

Engineering, Maintenance of Way and Signaling

L. V. Bean has been appointed chief engineer in charge of the roadway department of the Georgia, Florida & Alabama, with headquarters at Bainbridge, Ga., effective August 1.

M. F. Steinberger has been appointed special engineer on the staff of the vice-president in charge of operation and maintenance, on the Baltimore & Ohio, with headquarters at Baltimore.

C. M. Cannon, division engineer of the East Carolina division of the Seaboard Air Line, with headquarters at Charleston, S. C., has been transferred to the Alabama division, with headquarters at Savannah, Ga., succeeding **W. A. Greenleaf,** appointed assistant division engineer of the North Carolina division, with headquarters at Hamlet, N. C.; **W. J. Gooding,** division engineer of the South Carolina division, with headquarters at Jacksonville, Fla., has been transferred to the East Carolina division to succeed Mr. Cannon, and **O. F. McNairy** has been appointed to succeed Mr. Gooding, effective August 15.

Railroad Administration

Swagar Sherley has resigned as director of the Division of Finance of the Railroad Administration, effective on September 1, to engage in the private practice of law. **D. C. Porteous,** assistant director, has been appointed acting director of the division.

Obituary

C. C. Wilson, vice-president of the Ringling, Eastland & Gulf, died suddenly on August 9 at Eastland, Texas.

John C. Gleason, formerly superintendent of the Detroit Southern with headquarters at Springfield, Mo., died at New Rochelle, N. Y. on August 16.